CONTENTS

MARCH, 1924

Honey Markets		132-133
Editorials		137-139
Some of the Wonders of Pollen	Dr. E. F. Phillips	140-145
Honey in Miniature Sections	E. R. Root	145-147
The Central Extracting Plant	J. L. Byer	148-149
Some Pacific Coast Beekeepeers	Dora Stuart	149-151
Learning and Unlearning	Leslie Burr	151-153
Removing Bees from Cellar	M. J. Deyell	154-155
Uniformity in Equipment	J. A. Green	155-156
Don't Condemn New Ideas	C. S. Engle	156
Siftings	J. E. Crane	157
From North, East, West and South		158-164
Heads of Grain from Different Fields		165-167
Talks to Beginners	Geo. S. Demuth	168-169
Gleaned by Asking	Geo. S. Demuth	170-171
Just News		172
Bees, Men and Things		173
A. I. Root's Story of His Own Life		174-176

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Entered as second class mail matter at the Postoffice at Medina, Ohio. Published monthly. Space occupied by reading matter in this issue, 61 per cent; advertising, 39 per cent.

THE A. I. ROOT COMPANY, Publishers, Medina, Ohio

Editorial Staff

Geo. S. Demuth and E. R. Root, Editors — H. H. Root, Assistant Editor — H. G. Rowe, M'n'g Editor

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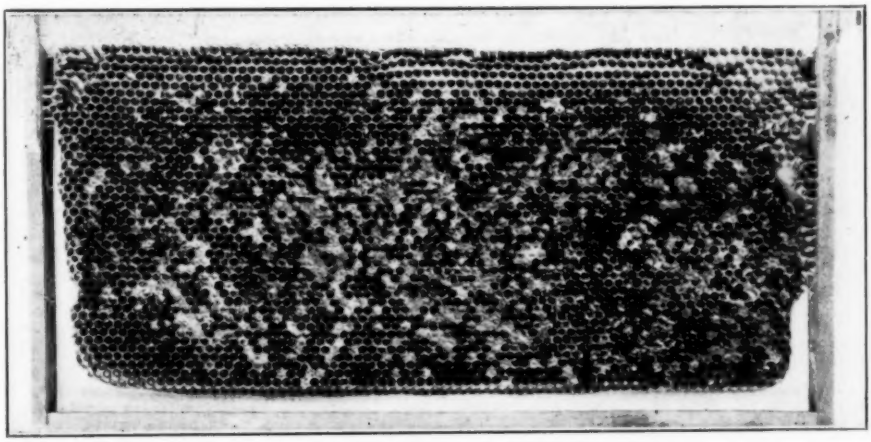

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HONEY MARKET.

U. S. GOVERNMENT MARKET REPORTS. Information from Producing Areas (first half of February).

CALIFORNIA POINTS: Southern California. Weather very unfavorable and rainfall far below normal. With rainfall in February and March some sage honey can be expected, but most beekeepers in the orange-sage district are pessimistic over the 1924 crop. Where bees have access to manzanita bloom they are building up well and gathering a little surplus. Some early pollen secured from willows. Some bees being moved to citrus groves. The Imperial Valley reports colonies in good shape. Few sales light amber alfalfa in 60-lb. cans reported at 10c per lb., small pails 14c per lb. A little beeswax has moved at 25c per lb. Northern California.—Several days' good rain early in February, which will be very helpful to the honey crop the coming season. Beekeepers generally holding star thistle for 10c per lb.; one small sale at 9½c. Some dark honey sold at 5-6c per lb. Country-run wax has sold at 22-24c per lb. cash, or 25c in trade.

PACIFIC NORTHWEST.—With a mild winter, plenty of rain and bees wintering well, prospects are good for 1924. Few sales white extracted in 60-lb. cans reported at 12½c per lb., light amber 10c, 5 and 10 lb. pails have sold at 11-15c per lb.

INTERMOUNTAIN REGION.—The weather moderated late in January and permitted frequent flights. Where well supplied with stores, colonies have been wintering well in spite of the cold weather, but some colonies are short of feed, and heavy spring losses are feared from such hives. Prospects generally favorable for a good crop in 1924. Extracted honey moving fairly well in small lots; little demand reported for carlots. Comb honey is largely exhausted. Few sales reported of extracted white sweet clover and alfalfa, carlots 9-9½c, single 60s 9-13½c, some 15c, ton lots 10-12½c, small pails 11-15c, few up to 19c per lb. Carlots generally being held for 10c per lb. Fancy white comb has sold lightly around $5.00, choice $4.50, off-grade $4.00 per case. Beeswax has brought the beekeeper 23c per lb. cash, or 25c in trade.

ARIZONA POINTS.—Bees are raising brood and fast consuming the stores in the hives. Cold weather may set them back. No sales reported.

TEXAS POINTS.—Due to cold weather, bees have been confined to the hives a good deal, but when able to fly have brought in pollen, and brood-rearing is going on vigorously. The rain has let up enough to allow farmers to plow, but abundance of moisture forecasts a good early honey crop. Few sales light amber extracted in small pails reported at 13½c per lb. Beeswax is selling at 23c per lb. cash or 25c in trade.

PLAINS AREA.—Bees were able to fly during last week in January, but weather has since been continued cold, which has been hard on bees unless well protected or in cellars. Honey plants generally covered with snow. Few sales reported of light amber extracted in ton lots 9c per lb.; 5-lb. pails, white extracted, wholesale, 15c per lb.; light amber 12½c. Comb honey, fancy white, has sold lightly at $5.00 per case, No. 1 $4.10-4.50 per case. Yellow wax, 25c per lb.

EAST CENTRAL AND NORTH CENTRAL STATES.—Bees had flights early in February, and those well cared for are doing well in spite of cold weather. Many bees not fed in fall are already dead. Outlook for clover generally good, although some sections report lack of snow protection. Demand for honey variable. Many, especially small producers, are already sold out. Some large producers still have considerable on hand, and with sluggish demand, appear more anxious to unload. Queen breeders report large orders for queen cages and brood-frames. Sales reported, per lb.: Extracted white clover, ton lots, 9½-12c; single 60s, 11-13½c, few 15c; small pails, 14-18c; amber, ton lots, 8-10c; 60s, 12c. Comb honey, scarce, No. 1, $5.00-5.25; No. 2, $4.00-4.50.

NORTHEASTERN STATES.—Bees quiet in cellars and wintering well out of doors. They have had frequent flights this winter. Frequent freezing and thawing of ground, with little snow protection, has hurt clover, and prospects for 1924 are not so favorable. Honey, especially buckwheat, is moving rather slowly, and sales are generally in small pails. Sales reported as follows: Extracted, per lb., white clover, ton lots, 10-12c; 60-lb. cans, 12-12½c, small pails, 14-17c; buckwheat, ton lots, 8-10c; single 60s, 10c; small pails, 12-15c, some low as 8c; mixed buckwheat and clover, small pails, 15c. Comb honey, per case, white clover fancy, $4.50; No. 1, $4.00; buckwheat No. 2, $3.00.

SOUTHEASTERN STATES.—Reports continue to indicate that this has been the most severe winter in years. Even in Florida cold and rain have kept bees in the hives a good deal. On warm days they have gathered some nectar from pennyroyal. Georgia reports almost no early plants budding. Continued cold has caused winter stores to become exhausted and has delayed brood-rearing until it is at least 3 weeks behind, which is unfortunate for those selling package bees. Alabama reports fairly good prospects for this year. In Louisiana bees are working on maple and elm when cold and rain permit. Brood-rearing appears less backward than in Georgia and the outlook is good for the package business. Few sales reported of light amber in barrels at 8-10c, amber, 6-8c per lb. Beeswax has brought producers 25c per lb. cash, or 27c in trade.

PORTO RICO.—Practically no stocks on hand. Honey quoted at 53c per gal. in 600-lb. barrels.

Telegraphic Reports from Important Markets.

BOSTON.—No large receipts reported since last report. Trading very slow, market very dull, no change in prices. Comb: Sales to retailers, New York, 24-section cases No. 1 carton stock, $6.00-6.50; Vermont, 20-section cases carton stock, $4.50-6.00. Extracted: Sales to confectioners and wholesale grocers, per lb., Porto Rico, light amber 10c, dark 8½-9½c; Hawaii, white, 10-11½c; California, light amber sage, 13-14c; white orange, 16c.

CHICAGO—Since last report 36,800 lbs. Montana, 3,300 lbs. Wisconsin and 200 lbs. Wyoming arrived. Movement slow, market slightly weaker since last report. Extracted: Sales to bottlers and confectioners, Wisconsin, Illinois and Iowa, white clover and alfalfa, 10½-11c, light amber 9½-10c, dark amber mixed flower, 8-8½c. Comb: Sales to retailers, 24-section cases Montana, white sweet clover and alfalfa, and New York and Wisconsin, white clover fancy, $4.75-5.00, choice $4.25-4.50; dark, $2.50-3.50. Beeswax: Movement has shown improvement since last report. Market firm. Wisconsin, Illinois and Iowa, light, 27-29c; medium dark, 25-27c. Africa and South America, light 24-26c; dark, 20-24c.

DENVER.—Demand and movement slightly improved, but prices are unchanged. Extracted: Sales to candy manufacturers and bakers, Colorado, sweet clover and alfalfa white, 14½; light amber, 13½c per lb. Comb: Sales to retailers, Colorado, 24-section cases white alfalfa and sweet clover, choice, $5.60; off-grade, $5.00.

KANSAS CITY.—No carlot arrivals since last report. Supplies moderate. Demand and movement moderate, market steady. Extracted, per lb., Colorado, alfalfa white 12c, light amber, 11½c. Comb: 24-section cases Colorado, white alfalfa extra-fancy, $6.00; fancy, $5.75; No. 1, $5.50.

MINNEAPOLIS.—No large arrivals since last report. Supplies light. Demand light, mar-

(Continued on page 184.)

Monthly Report of Bees, Plants, Honey Prices, Etc., from Actual Honey Producers.

Early in February we sent to actual honey producers the following questions:

1. What portion, if any, of the 1923 crop is still in the hands of beekeepers in your locality? Give answer in per cent.
2. Do you expect the old crop to be entirely cleaned up before the new crop is ready for market?
3. At what price has honey been sold in large lots (carload or less) in your locality during the past month? (a) Extracted honey per pound? (b) Comb honey, fancy and No. 1 per case?
4. What are the prices when sold to grocers in case lots? (a) Extracted honey in 5-lb. pails or other retail packages in terms of of 5-lb. pails? (b) Comb honey, fancy and No. 1 per case?
5. What is the retail price to consumers in your locality? (a) Extracted honey in 5-lb. pails, or other retail package in terms of 5-lb. pails? (b) Comb honey, per section?
6. How is honey now moving on the market in your locality? Give answer in one word, as slow, fair or rapid.
7. What is the condition of colonies at this time compared with normal? Give answer in per cent.
8. What is the condition of the honey plants at this time compared with normal? Give answer in per cent.

The answers, as returned by our bee and honey reporters, are as follows:

State.	Reported by:	Pct. Unsold.	Clean up?	In large lots. Ex.	In large lots. Comb.	In small lots. Ex.	In small lots. Comb.	Retail prices. Ex.	Retail prices. Comb.	Movement.	Col. Con.	Plant Con.
Ala.	J. M. Cutts	..	..	..	..	..	..	..	..	..	75	80
Ark.	J. Johnson	0	Yes	..	..	..	..	$1.12	$.27	..	50	75
Ark.	J. V. Ormond	0	Yes	..	..	..	..	..	..	..	100	100
B.C.	W. J. Sheppard	10	Yes	$.20	..	$1.25	..	1.50	..	Fair	100	100
Cal.	L. L. Andrews	0	Yes	..	..	..	..	1.00	.31	..	50	50
Cal.	M. A. Saylor	3	Yes	.11	..	.70	4.80	.90	.25	Fair	95	95
Cal.	M. C. Richter	10	Yes	..	..	..	..	1.50	..	Fair	100	100
Cal.	G. Larinan	10	Yes	.12½	..	..	..	1.00	..	Rapid	75	25
Cal.	M. H. Mendleson	0	Yes	..	..	..	..	1.10	.35	Slow	100	..
Col.	J. A. Green	30	Yes	..	..	.70	1.00	.85	.25	Fair	100	100
Col.	B. W. Hopper	0	Yes	..	..	.85	6.00	1.00	.30	Fair	100	100
Conn.	A. Latham	25	Yes	..	..	1.00	6.30	1.25	.35	Fair	140	100
Conn.	A. W. Yates	20	Yes	..	..	1.00	7.00	1.30	.40	Fair	100	100
Fla.	C. C. Cook	0	Yes	.08½	..	.75	..	.95	..	Fair	100	125
Fla.	H. Hewitt	0	Yes	..	..	.75	..	1.00	..	Fair	90	100
Fla.	F. E. Munson	2	Yes	..	..	.70	..	.85	..	Rapid	110	80
Ga.	J. J. Wilder	0	..	..	..	..	..	..	..	..	100	100
Ida.	J. E. Miller	0	Yes	.09¼	..	.65	4.50	..	..	Fair	..	100
Ill.	C. F. Bender	0	Yes	..	..	..	6.00	..	.30	Slow	90	60
Ill.	A. L. Kildow	50	..	.10	4.75	.75	..	..	.25	Slow	100	50
Ind.	T. C. Johnson	0	Yes	..	..	.90	6.00	1.10	.30	Slow	100	100
Ind.	E. S. Miller	30	No	..	..	.80	5.75	1.00	.30	Fair	100	100
Ind.	J. Smith	0	Yes	..	..	1.05	..	1.25	.35	Fair	75	125
Ia.	E. G. Brown	20	Yes	.10	..	.75	5.00	1.25	.35	Fair	100	100
Ia.	W. S. Pangburn	25	..	..	..	.75	..	.80	..	Slow	100	90
Ia.	F. Coverdale	¼	..	..	..	..	4.75	..	.27	Fair	85	100
Kan.	J. A. Nininger	30	Yes	..	..	.75	5.75	.95	.30	Fair	80	80
Ky.	P. C. Ward	5	Yes	..	..	..	..	..	..	Slow	100	100
La.	E. C. Davis	2	Yes	..	..	.75	..	1.00	..	Fair	100	100
Me.	O. B. Griffin	18	Yes	..	..	1.00	6.25	1.25	.35	Slow	100	90
Md.	S. G. Crocker	10	..	..	..	.87	5.85	1.25	.35	Slow	100	75
Mass.	B. N. Gates	..	Yes	..	..	..	..	..	.50	Fair	..	50
Mich.	I. D. Bartlett	10	Yes	..	..	.75	5.00	1.00	.35	Fair	100	100
Mich.	L. S. Griggs	5	Yes	..	..	.72	6.25	.90	.30	Fair	100	100
Mo.	J. M. Romberger	0	Yes	..	..	.75	5.25	1.00	.32	..	..	100
Mo.	J. H. Fisbeck	5	Yes	..	..	1.00	..	1.25	..	Slow	100	50
Nebr.	H. Wagner	15	..	.10½	..	.82	..	1.15	.30	Fair	90	95
N.J.	E. G. Carr	5	Yes	..	..	..	..	1.25	.35	Fair	100	70
Nev.	T. V. Damon	0	Yes	.12	..	.75	5.00	..	.25	..	80	100
N.Y.	Adams & Myers	25	No	.10	..	.85	6.00	1.10	.30	Fair	100	100
N.Y.	N. L. Stevens	5	Yes	.10	..	.80	..	.90	..	Slow	110	80
N.Y.	F. W. Lesser	3	Yes	.10½	4.50	..	4.80	1.00	.30	Slow	100	80
N.Y.	R. B. Willson	10	Yes	..	..	.92	5.15	1.12	.27	Slow	125	100
N.C.	C. S. Baumgarner	0	Yes	..	..	..	..	1.00	.30	Fair	100	100
N.C.	W. J. Martin	10	Yes	.10	..	1.00	5.00	1.25	.40	Fair	90	90
N.C.	C. L. Sams	5	Yes	.14	4.80	1.00	5.00	1.25	.30	Fair	95	100
Ohio.	F. Leininger	..	Yes	..	..	..	..	..	..	Fair	75	80
Ohio.	J. F. Moore	5	Yes	..	..	.85	4.00	1.10	.30	Fair	90	90
Okla.	C. F. Stiles	0	..	..	..	.87	6.25	1.15	.35	Slow	80	75
Ore.	E. J. Ladd	..	Yes	..	..	..	5.50	..	.30	Slow	100	100
Ore.	H. A. Scullen	20	Yes	..	..	.80	4.75	1.00	.25	Fair	100	100
Pa.	D. C. Gilham	30	..	..	..	1.05	7.20	1.40	.40	Fair	70	80
S.C.	A. S. Conradi	..	..	..	..	..	..	1.25	.30	Slow	100	100
Tenn.	J. M. Buchanan	..	Yes	..	..	..	..	1.25	..	Slow	90	90
Tenn.	G. M. Bentley	0	Yes	..	..	..	..	1.25	.35	Slow	85	90
Tex.	J. N. Mayes	1	Yes	..	..	1.00	..	1.25	..	Slow	90	90
Tex.	T. A. Bowden	0	Yes	..	..	.85	..	1.15	..	Slow	100	100
Tex.	H. B. Parks	0	Yes	..	..	..	..	..	..	..	100	100
Vt.	J. E. Crane	8	Yes	..	..	1.00	6.50	1.25	.35	Slow	100	100
Va.	L. N. Gravely	0	Yes	.16	6.00	1.00	6.50	1.25	.40	Fair	85	90
Va.	T. C. Asher	2	Yes	..	..	1.10	6.00	1.25	.30	Fair	100	100
Wash.	W. L. Cox	40	Yes	..	..	.80	5.75	1.00	.40	Fair	100	100
W.Va.	W. C. Griffiith	0	Yes	..	..	1.00	6.60	1.25	.35	Slow	80	75
W.Va.	T. K. Massie	0	..	..	..	..	..	1.00	.37	Fair	75	95
Wis.	E. Hassinger, Jr.	20	Yes	.11	..	.80	..	1.00	..	Fair	100	90
Wis.	N. E. France	5	Yes	..	..	.80	4.50	1.10	.25	Fair	90	100
Wis.	H. F. Wilson	..	..	..	..	..	..	..	..	..	100	100
Wyo.	C. H. Ranney	0	..	.09½	..	.65	..	.75	..	Slow	100	100

MUTH'S 1924 CATALOGUE

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Low Price

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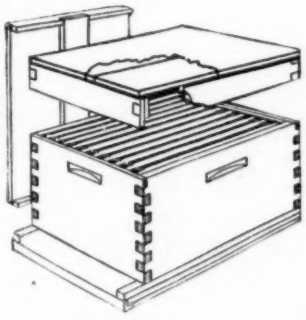
Special Prices

THE DIAMOND HIVE

Wood cover, reversible bottom-board, standard Hoffman self-spacing frames, 10-frame size, per crate of five (5) complete hives,

$12.00

per crate.



THE STIRLING HIVE

Metal cover, reversible bottom-board, standard Hoffman self-spacing frames, 10-frame size, per crate of five (5) complete hives,

$15.00

per crate.

STANDARD 10-FRAME HIVE BODIES with Hoffman self-spacing frames. Per crate of 5	$6.75
STANDARD 10-FRAME HIVE BODIES without frames. Per crate of 5	$4.00
JUMBO HIVE BODIES with frames. Per crate of 5	$8.00
COMB SUPERS, No. 1 style, 4¼ x 4¼ x 1⅞-inch, with section-holders, separators. Per crate of 5	$4.50
STANDARD HOFFMAN SELF-SPACING FRAMES. Per 100	$5.00

NOTE—A five (5) lb. package of Medium Brood Foundation free with every $50.00 order received during March.

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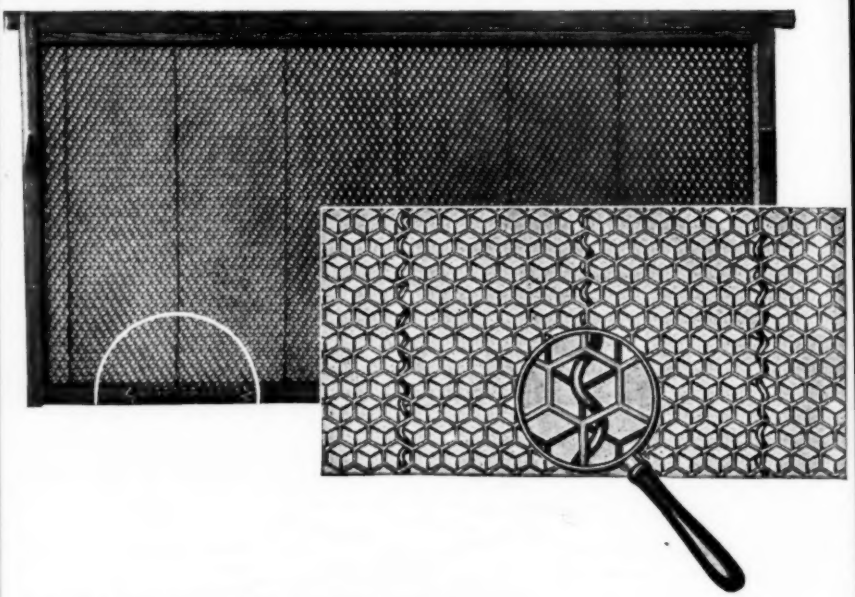

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Dadant's Wired Foundation saves hours of wiring labor.

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AN **EXCLUSIVE** feature of Dadant's Wired Foundation used in slotted bottombar frames. ¶ But that is only one of its delights—

—Holds any load without sag.
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Keep your beeswax pure—Use Dadant's Foundation.

GLEANINGS IN BEE CULTURE
MARCH, 1924

EDITORIAL

OUR CORNERSTONE

REMEMBER at all times that improved bee culture is our end and aim and we trust no one will hesitate to give any facts from experience, because they may tend to overthrow any particular person or "hobby." If any of our special plans don't work, or if anything we advertise has had its value overestimated, here in these pages is the place of all others to set the error right.—From A. I. Root's "introductory" in the first issue of Gleanings in Bee Culture, January 1, 1873.

JUST as we go to press we learn that a bill has been introduced in both the Senate and Assembly of the New York State legislature, to prohibit the keeping of honeybees in a village of 100 or more inhabitants, within 500 feet of any dwelling or cultivated garden. Just what the purpose of such a bill could be is beyond understanding. The courts have decided over and over again that bees are not a nuisance *per se*, and they are now being kept in villages and cities all over the country without inconvenience to any one. Such a law would be a serious blow to the beekeeping industry of the state but a more serious blow to the growing of fruit in villages, cities and suburban districts through a lack of pollination. Every beekeeper of New York State should write to both the senator and representatives of his district, protesting against Senate Bill No. 776 and Assembly Bill No. 941.

Freak Legislation.

AN important change was made in the organization of the American Honey Producers' League, by action of the national convention held in Chicago on January 24 and 25, so that membership is now open to individual beekeepers everywhere in the United States and Canada. Heretofore only members of affiliated organizations could join the league. The membership fee for individuals is one dollar per year.

The League Meeting.

Among the important projects the League is now working on are; an intensive advertising campaign based on the co-operation of individual beekeepers, the League assisting in designing labels, posters and ads for local promotion of honey sales, a proposed national foulbrood-control campaign by which it is hoped the U. S. Department of Agriculture will direct an area-clean-up plan, beginning with those states which produce more honey than they consume; and the organization of a breeders' section, probably with plans for bonding queen-breeders and shippers of package bees, to prevent losses to purchasers of bees and queens.

B. F. Kindig, Lansing, Michigan, was elected president for the ensuing year, and C. P. Campbell was re-elected vice president. S. B. Fracker, Madison, Wisconsin, was re-appointed secretary by the executive committee. The term of E. S. Miller as a member of the executive committee had expired and he was re-elected for a term of three years, ending February 1, 1927. C. P. Dadant was elected delegate to the International Apicultural Congress at Quebec.

MANY colonies that were permitted to go into the winter short of stores last fall have already died from starvation, and many more will die during March and April if not fed. Some who neglected feeding their colonies last fall are hoping that they will pull through until the weather is warm enough to feed them. Where there is any question about the bees having enough stores, the colonies should be examined on the first nice day in March and if short of stores should be fed. This can be done even in cold weather by laying a frame of honey directly on top of the brood-frames, then covering the comb of honey and replacing the packing. If

Colonies Short of Stores.

combs of honey are not at hand, it is usually possible to feed sugar syrup, in the North this month by selecting a warm day. The syrup should be made the same as for feeding in the fall, as described in the November issue of Gleanings, and a ten-pound pail feeder should be placed directly over the cluster and the packing put back snug in place. If the weather is too cold to feed syrup, the bees can be kept from starving until a warm day comes, by laying a block of hard candy directly over the cluster.

The Alcohol-Formalin Solution.

MOST of the bee journals published in foreign countries have been quick to sense the great importance of Dr. Hutzelman's discovery by which combs containing American foul brood can be sterilized in a practical way. The article on this subject, which was published in the November, 1923, issue of this journal, has been translated and published entire in many cases, while in others a summary of this article appears on the editorial pages. While the Editor is not able to read many of the journals published in foreign countries, he finds no difficulty in recognizing the translations of this article or the editorial discussions concerning it, since the names of Dr. J. C. Hutzelman and O. E. Barber appear frequently in them. The wide publicity given to this epoch-making discovery since last November has carried the good news to beekeepers throughout the entire world that it is no longer necessary to destroy combs containing American foul brood.

In this country nothing that has been published in the bee journals for years has created so much interest as this article in the November issue. Thousands upon thousands of combs have already been saved from the melting pot by being sterilized, and during the coming season no doubt we shall see the hottest fight ever put up against American foul brood in this country. Some of the state inspectors are establishing central plants for sterilizing combs, while others are disseminating information among beekeepers as to how this can be done on a small scale. In several states the state inspectors are planning to give demonstrations at various points scattered throughout the state in order to show beekeepers how to save their combs. Gleanings is certainly proud of having brought this great discovery to the attention of beekeepers, and the thought of the great benefit the beekeeping industry will derive from it is well worth the year of investigation carried on here after Dr. Hutzelman first announced his discovery, in order to be sure of its practicability before proclaiming the alcohol-formalin solution a successful and practical method for sterilizing diseased combs.

The Straight-Handled Honey Knife.

THE invention of the honey extractor made it necessary to devise a special knife for uncapping the combs to be extracted. One of the early forms of honey knives was simply an ordinary long-bladed knife with the handle bent slightly; but later the honey knife took on its present form, having the offset handle which enables the operator to use the heel of the knife in slicing off the cappings in depressions in the combs. Several years ago Morley Pettit began using and advocating a straight knife for uncapping, and in Ontario many beekeepers are now using such a knife. The honey knife described by R. F. Holtermann in our January issue embodies this principle.

It is interesting to note that the straight knife has been made possible by improved methods of honey production. When ten combs were used in the standard extracting super the cappings were sliced off the combs without cutting deeper than necessary; but since the practice of spacing the combs wider, using only eight or nine combs in the standard super has become general, the practice of cutting deep when uncapping has become the rule. During a good honey flow, and especially when the colonies are strong, these thick combs can be uncapped completely by cutting deep without going back over the combs to take off the cappings in depressions in the comb. This makes possible the use of the straight knife and suggests the possibility of a practical machine for uncapping. However, the straight knife is becoming popular only in regions where the honey flow is usually rapid and continuous. In localities having slow or intermittent honey flows, which always result in irregular and often thin combs, the straight knife can not well be used. The straight knife goes with good beekeeping and good localities.

Sugar or Molasses Not Suitable for Automobile Radiators.

MANY have inquired why sugar syrup, commercial glucose or molasses can not be used as well as honey as an anti-freezing mixture in automobile radiators. As has been pointed out several times previously in the editorial pages of this

journal, the molecular construction of honey is such that the freezing point is depressed nearly twice as much as a sugar solution of the same concentration. The depression of the freezing point of a solution depends upon the number of molecules in the material in solution instead of upon their size. In the ripening process of honey the molecules of sugar are broken into two parts, levulose and dextrose, thus resulting in twice as many molecules as before in the same amount of material. In other words, the molecules of ordinary cane sugar are about twice the size of the molecules in honey; it would therefore take about double the concentration of a sugar solution as of a honey solution to depress the freezing point to an equal extent. This makes the use of sugar, glucose or molasses prohibitive for automobile radiators because such a heavy mixture would be required that it would not circulate properly.

This explains why only well-ripened honey should be used, for the more nearly complete the process of inversion, the greater the depression of the freezing point. Honey carried over from the previous season should be excellent for this purpose, for the inversion should then be practically complete. This brings up the question as to why invert sugar in which the molecules have been split as in honey can not be used. Apparently honey contains something not found in invert sugar, which almost entirely prevents expansion when the mixture begins to freeze. In the tests which we made here two years ago the honey mixture did not break the thinnest bottles when the mixture was frozen solid, while the invert sugar mixtures did.

Honey in Automobile Radiators.

SINCE the use of honey in automobile radiators was first published two years ago in this journal (see Gleanings in Bee Culture, page 167, March, 1922), it has been used chiefly in an experimental way by beekeepers or by those interested in honey; but during this winter it is being tried out by others to a considerable extent, and some of the agricultural colleges are carrying on research work in perfecting a non-freezing solution in which honey is the chief constituent.

Articles on this subject have appeared in many newspapers and magazines during the winter. Henry Ford's paper, "The Dearborn Independent," for January 25, 1924, has this to say about it:

> In using honey as an anti-freeze mixture in automobile radiators, it should be mixed with water, half and half. Engine-head gaskets and hose connections should be tightened up before using the solution, as the honey water will pass through apparently tight connections, causing stickiness. The solution becomes more efficient with evaporation from steaming, whereas an alcohol solution loses strength. A dollar and a half's worth of dark honey, unfit for table use, should last all winter."

There is also a very nice editorial mention of the honey mixture in the Scientific American for February.

How long will our 1924 honey crop last if the big automobile manufacturers should come out with an endorsement of honey as an anti-freeze mixture for automobile radiators!

In order to obtain some information as to the extent of the use of honey in this new way, a question was included in the list of questions to our market reporters for March asking how much honey is being used in automobile radiators in their respective localities. The replies show that the beekeepers themselves have not sold much honey for this purpose, the amount ranging from a few pounds up to 1000 pounds. A few individual beekeepers in the West are reported as having disposed of several tons of honey for this purpose. For driving in some of the western states where, on account of the higher altitude, water boils at a much lower temperature than at sea level, many have adopted the practice of adding enough honey to the water in the radiator in the summer to bring the boiling point up to about 212 degrees Fahrenheit.

Since motorists are anxiously looking for something better than alcohol to put into their radiators during freezing weather, the publicity given to the use of honey for this purpose during this winter will no doubt result in much honey being used in this way next winter. Beekeepers who sell honey for this purpose should caution motorists as to its proper use; for, while honey gives excellent results as an anti-freeze when properly used, it is by no means foolproof. Those who have tried honey in leaky radiators or in machines having a leaky gasket under the cylinder head will promptly condemn it as an anti-freezing mixture. Also those who have taken their cars out of a cold garage when the temperature was 10° or 15° below zero and driven some distance without first being sure that the slushy mixture is circulating properly, will not be inclined to boost honey for automobile radiators. The importance of a possible market for large quantities of honey for this purpose is so great that great care should be taken in having it used properly so that it will not be condemned by motorists before it has been given a fair trial.

SOME OF THE WONDERS OF POLLEN

By Dr. E. F. Phillips

The Life-giving Element for both Bees and Plants. A Peep behind the Scenes in Nature's Drama

[Have you ever looked at a snowflake or a grain of pollen under the microscope? Have you seen the remarkably beautiful process of reproduction in plants? Do you know what clever methods Nature employs to prevent fertilization by pollen from the same plant and to insure that pollen be carried to the flower from another? Do you realize the importance of an abundant supply of pollen for the bees? This paper, read in part at the Wisconsin Beekeepers' Chautauqua last August, throws light upon these interesting topics.—Editor.]

It is a matter of common knowledge to beekeepers that the amount of pollen collected by bees and used by the colonies as food for their young is enormous. If a colony is queenless for some time and consequently has no brood to feed, it may, as is sometimes stated, 'to some degree decrease its activity in pollen-collection, yet the combs of the brood-nest are soon filled with stored pollen, for which the bees then have little if any use. This is at least an indication of the amount of pollen which must be collected and used by a normal colony during the period of brood-rearing, but which they often use almost as rapidly as it is gathered, so that it makes less showing in the hive. No attempt has been made to determine accurately the amount of pollen used by an average colony during the course of the year, yet the amount must be a number of pounds. Since each cell of stored pollen contains millions of pollen grains, the vastness of this supply is apparent.

Pollen furnishes an important constituent of the food of the brood of bees, and without such food brood-rearing is impossible. The chemical work done years ago by von Planta brought to the attention of beekeepers the character of this food. Recognizing the necessity for a protein food for rapidly growing animals, such as the bee larvae are, beekeepers have made numerous attempts to provide a substitute for pollen in times of shortage, and have in most cases attempted to provide them with a powdery material containing a considerable amount of protein of some kind, in the hope that it would serve for the needs of the larvae. Because the bees must have a protein material which may be digested and utilized by them, studies of the chemical analysis of pollens are especially interesting to the beekeepers, especially those which deal with the nature of the proteins in pollens. One never knows what practical application newly discovered facts may have, and for this reason an attempt is here made to review briefly the work which has been done in this and allied fields of plant physiology and bio-chemistry.

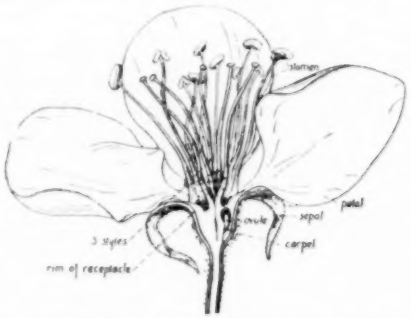


Fig. 1.—Median longitudinal section of flower of apple with parts of flower labeled. The double anthers are at top of stems labeled stamens. (After Robbins.)

A pollen grain is the male cell of the plant which in the fertilization of the ovule combines with it to form the fertilized ovum, which later develops into the essential part of the seed. Fertilization of the ovule is necessary to the development of seed and fruit in most species of the gymnosperms and angiosperms, and pollen is produced in great abundance in these two great branches of the plant kingdom. It is not homologous with the spores of ferns and other lower divisions of the plant kingdom, although bees are sometimes reported as collecting these materials as they do pollen. Pollen is produced in definite organs in the flower, known as anthers (Fig. 1), these with their supporting filaments being evolved, as are other floral organs, from modified leaves. On the maturing of the pollen grains (Figs. 2 and 3), making them suitable for their normal function, the anthers open so as to release the pollen grains. This phenomenon is is known as dehiscence, and the opening occurs through specially constructed clefts, or openings of some sort, in the anthers.

One is tempted to say that pollen is often somewhat neglected in the study of botany, yet a considerable number of botanists have described and illustrated with great care the form and structure of pollen grains. Several important articles have appeared describing the external structures of these interesting particles. They are found to vary greatly in form, and often to present bizarre and curious modifications. The sculpturing of these

grains is most elaborate, and one is at a loss to explain what use these intricate patterns are to the economy of the plant. The grains differ from each other in form, color, surface markings, texture of

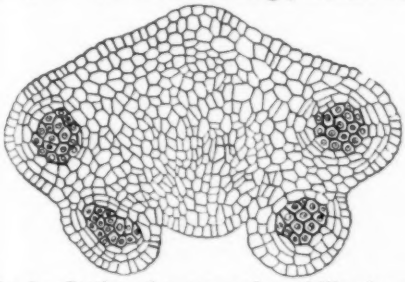


Fig. 2.—Section of young anther of lily showing the four sporangia from which pollen grains are developed. (After Coulter.)

walls and translucency. In order to show this great variability, there is perhaps no better plan than to show illustrations of a few patterns (Figs. 4, 5 and 6) which have been described. The accompanying illustrations, taken from an interesting paper by Bastian, are valuable for this purpose.

The study of the form and structure of pollen grains has found an application in beekeeping. Efforts have been made to study the pollen grains contained in honeys, to determine to what extent the plant source of honeys may be established by this method. It has usually been assumed by those who have worked in this field that the method is a quite satisfactory one, yet there is reason to doubt its accuracy in many cases. In the first place, bees are able to obtain nectar from some flowers without coming in contact with the anthers, and from such flowers the honey may or may not contain pollen grains. Certain cases are known of honeys from certain flowers which do not contain the pollen grains of that species.

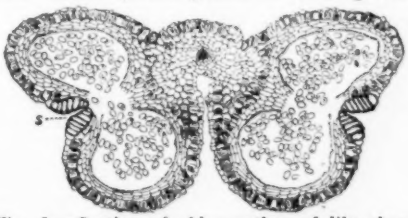


Fig. 3.—Section of older anther of lily showing sporangial cavities fused to form two pollen sacs which are filled with pollen grains. Dehiscence occurs at point marked S. (After Coulter.)

In extracted honey, there is also considerable chance that pollen grains from species of plants blooming at entirely different periods of the year may get into the honey during extracting, and even that

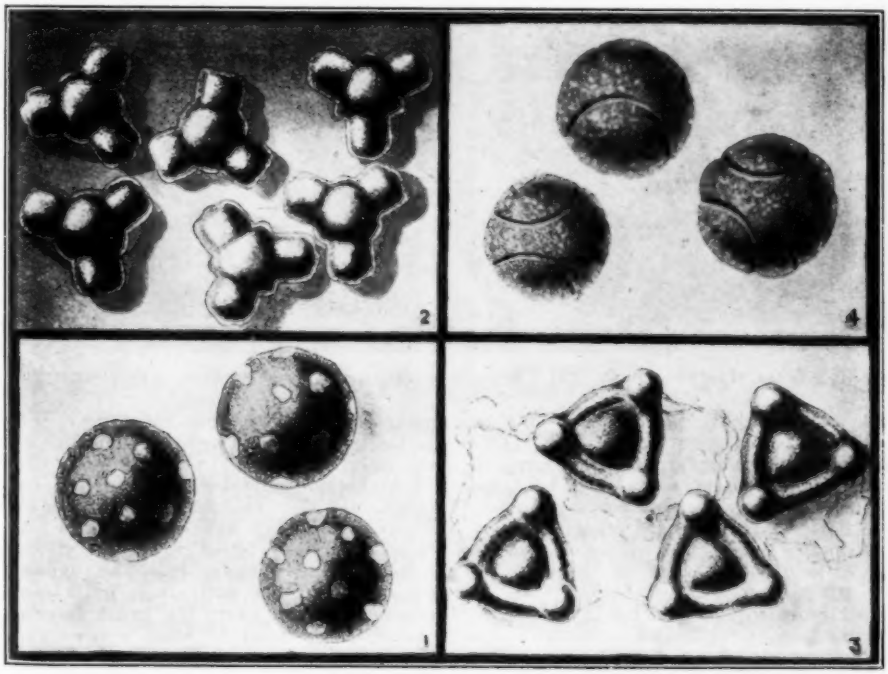


Fig. 4.—Types of pollen grains: (1) Phlox; (2) Clarkia; (3) Willowherb (showing threads of viscin which hold grains together); (4) Passion flower. (After Bastian.)

pollen from species which do not secrete nectar at all may be included. Whether there is any such mixing in comb honey has not been determined. On the whole, one must conclude that it is dangerous to make definite statements as to the source of a honey solely from an examination of the pollen grains contained in it. There is need for considerable more work on this subject before we can determine whether the examination of honey for the pollen in it is of any value whatsoever in determining its source.

An interesting point regarding pollen structure is that in certain plants in which there are flowers of more than one form, which vary in the lengths of their stamens and pistils, such as the dimorphic or trimorphic plants, there may be pollen grains of more than one type. This diversity of pollen form has a bearing on the fertilization of the ovules of these species, since in some cases apparently the flowers are fertilized efficiently only with pollen of the form unlike that of the flower in question. Here we have an interesting forerunner of self-sterility of which more will be said later. There are also certain flowers which have two kinds of pollen, one of which will form pollen tubes and are functional while other pollen grains are sterile. Early students of this subject believed the impotent pollen grains were produced as food for pollen-collecting insects.

The Lavish Production of Pollen.

The amount of pollen produced by flowers is often exceedingly large. It has been estimated that the common dandelion produces about 365,000 grains to the flower head and that a peony may produce 3,500,000 grains. In species which depend on the wind for the movement of pollen, such as the pines and firs, excessive amounts of pollen are produced. At the Bee Culture Laboratory, about which there are a considerable number of pine trees, the sidewalks are annually covered in spring with pine pollen, and the table back in the grove where we eat lunch is made yellow with this substance. Fir pollen is reported as being conspicuous on the snow of the Alps. Glass slides smeared with some adhesive material and exposed only after they have reached an altitude of 1000 feet above the earth's surface have been found to collect flying pollen grains abundantly. The experience of hay-fever patients is quite conclusive evidence as to the great amount of pollen produced by some species and the distance which it may travel. It has been estimated that one gram of ragweed pollen, so much feared by many

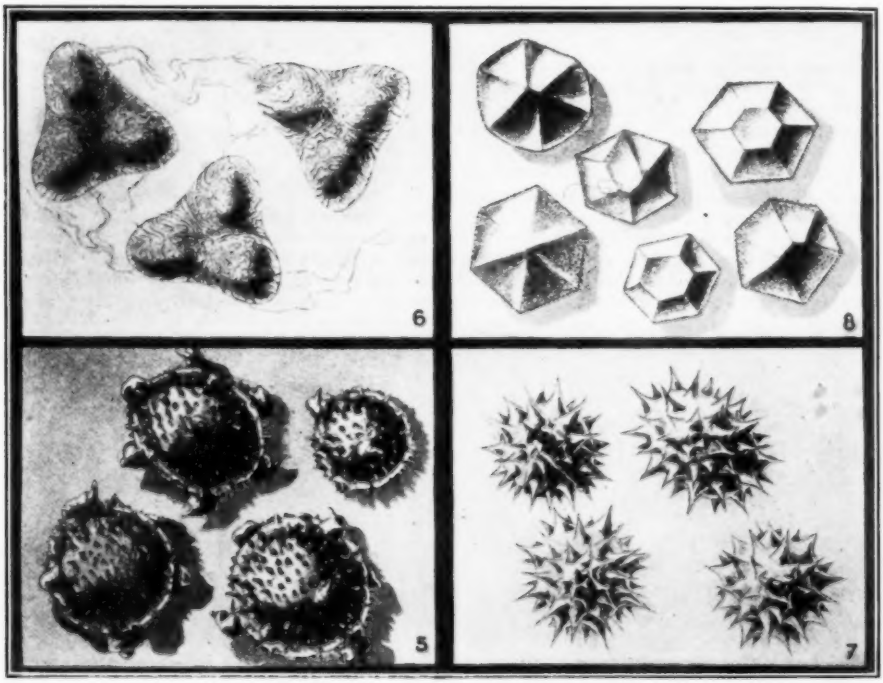


Fig. 5.—Types of pollen grains: (5) Vegetable marrow; (6) Rhododendron; (7) Marguerite; (8) Dandelion. (After Bastian.)

hay-fever sufferers, contains 172,800,000 grains and that one square meter of grass may produce 2,500,000 grains.

How Pollen is Carried from Flower to Flower.

The structure of pollen varies according to the method for its carriage. As is well known, pollen is carried from one flower to another and as a result cross-pollination is common in nature This is known from many experiments and experiences to be essential to the setting of seed in many species. The two commonest agencies for pollen transference are wind and insects. The elaborately carved and irregularly shaped pollens are found in plant species which depend on the work of insects in this field, and many such species also have the pollen grains covered with a sticky material, in order that they may more easily adhere to visiting insects. In some species, such as certain orchids and milkweeds, the pollen grains are united to form large masses, called pollinia, which adhere as a mass to the various insect structures and are thus more certainly carried in an efficient manner to the next flower. In the plants of the Heath family (Ericaceae), which includes so many valuable honey plants, the mature pollen grains always remain united in tetrads, or groups of four, as in developmental stages of all pollen. (See Fig. 5, No. 6.)

In the wind-pollinated plants pollens are usually small and smooth, and in many cases there is contained within the pollen shell one or more air sacs, which serve to lighten the grains, enabling them more easily to be carried by the wind (Fig 6, No. 10). Such grains are dry and dusty, and unless they contain air sacs are usually spherical in shape. It is usually in the flowers of wind-pollinated plants that the largest numbers of pollen grains are found, such as the pines which have already been mentioned. The size of pollen grains varies considerably, two interesting examples of this variation being shown by Oncsmodium having pollen grains averaging 13 micromillimeters in diameter and in the evening primrose with pollen grains about ten times as large in diameter.

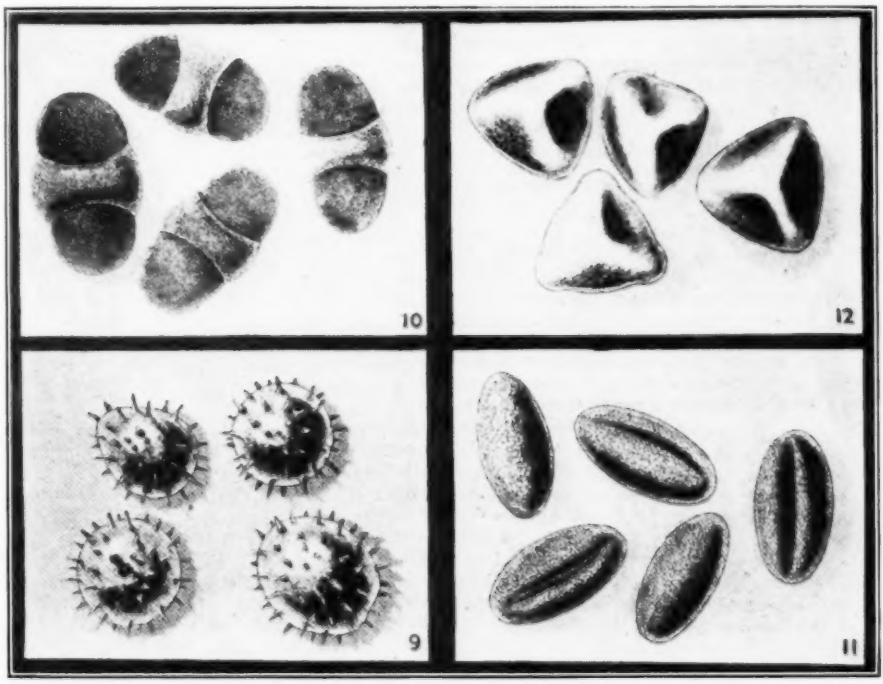


Fig. 6.—Types of pollen grains: (9) Mallow; (10) Scotch pine; (11) Lily; (12) Nasturtium. (After Bastian.)

The Covering of Pollen Grains.

Some interesting work has been done on the chemical composition of the outer membranes of pollen grains, and this work has an interesting significance in beekeeping. It was originally assumed that this covering consists exclusively of cellulose, but later work has shown that there are several distinct substances found in these coats, varying with the

plant species. Cutin, cellulose, pectinlike materials and modified callose have been described in these coats. There is always a double-layered membrane on the grains, the extine and the intine, and these may be unlike in composition. Each of these layers may consist of minor subdivisions or layers, also varying in composition. The sculpturing is usually on the extine, although the intine may show markings especially around the pores. In these layers there may be openings or pores through which the pollen tube grows during pollination of the flower, and the coverings of these pores may be unlike other parts of the outer covering in composition.

Fig. 7.—Germinating pollen grain, showing extrusion of pollen tube with nucleus of tube and also two male nuclei, one of which causes fertilization of ovule. (After Bergen and Caldwell.)

The composition of these coats is interesting in a study of the digestion of bees, since bees are unable to digest cellulose. To what degree they can digest other constituents of the pollen coats is undetermined, but there is some reason to believe that they are able to digest some of the constituents of more simple composition. Since the cellulose constituent at least is always left unmodified after it passes through the digestive tract, we find empty pollen grains with the coats slit but otherwise complete in great numbers in the rectal ampulla of the bees, and also there are found many pollen grains with their contents intact. This has led to the belief that unless pollen grains are broken by mastication when ingested the contents are unavailable to the bees as food. Although at present it is unwise to state this as true for all pollen grains, it is certainly true for some of them. There is the possibility that in the presence of sugars in the alimentary canal the pollen grains begin germination, thus releasing the grain contents into the pollen tube. This is an interesting speculation; but so far there is no observation to support it, even though one would suspect in advance that this would occur.

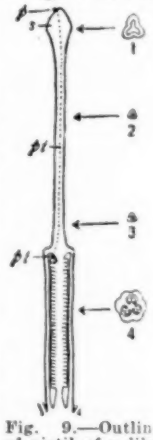


Fig. 9.—Outline of pistil of a lily, a type of flower in which there are numerous ovules to be fertilized. Each must be met by a separate extruding pollen tube to cause fertilization. (After Coulter.)

The Process of Fertilization.

The germination of the pollen grain has been mentioned, and it may be well briefly to describe this process in the fertilization of the flower. The accompanying illustrations (Figs. 7, 8 and 9) show how the pollen grain sends out a tube which finds its way through the pistil of the flower until it reaches the protected ovule to be fertilized. Here the male nucleus of the pollen grain unites with the nucleus of the ovule or female cell, the union giving rise to a fertilized ovum, from which the next generation of the species develops. The phenomenon of fertilization in plants is essentially like that in animals. The growth of the pollen tube through the pistil of the flower is facilitated by the secretion of materials by the pollen tube which digest a path through the cells of the tissues of the pistil in some cases, while in others a way is forced for the tube between the cells of the pistil. In this growth it is observed that certain nuclei pertain only to the growth of the pollen tube, while the tube carries within it the male nucleus essential to fertilization, which carries the hereditary characters determining the characteristics of the next generation. In the usual fertilization of an ovule, only the ovule itself receives a nucleus from the pollen, and as a re-

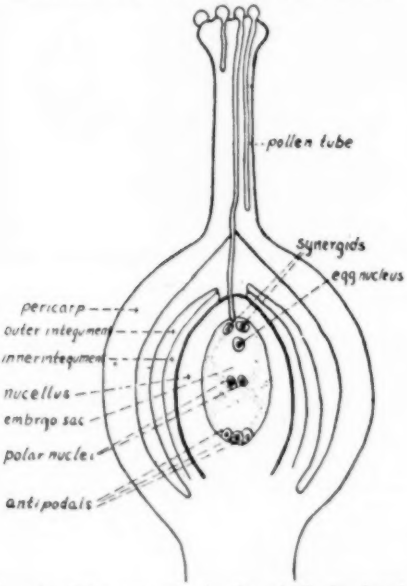


Fig. 8.—Diagram of simple pistil in longitudinal section showing growth of pollen tubes and a single ovule just prior to fertilization. (After Robbins.)

sult the surrounding tissues show no evident result of crossing when hybridizing occurs, but in other cases (Xenia) male nuclei from the pollen also unite with the endosperm or coat surrounding the ovule so that it too shows the result of crossing. Corn is a well-known example of this.

Washington, D. C.

HONEY IN MINIATURE SECTIONS

By E. R. Root

Evolution of the Sectional Honey Box. A Trick of the Trade worth Trying

While A. I. Root did not invent the sectional honey box, he did, in the early days of bee culture, introduce the idea of a small box of comb honey weighing approximately one pound, and with it, in a commercial way, comb foundation. Prior to this time the sections, so called, held three and even four pounds of honey and were nailed at the corners. Mr. Root was also the first one to make sections exactly 4¼ inches square. These dimensions were adopted by him because eight of them would nearly fit inside of the original Langstroth frame. Believing that a 4¼-section of honey should be produced in a large frame hanging in the hive, he changed the Langstroth dimensions just enough so that eight sections would fit inside. This made the inside length of the frame exactly twice the depth; but as the sections were nearly two inches wide by 4¼ square, it was necessary to have a frame to hold them with a top-bar, bottom-bar and end-bars of the same width as the sections, and hence the frames were called "wide frames." These one-pound boxes were so popular that the comb-honey business at that time jumped forward by leaps and bounds. While the extractor had been introduced in this country, comb honey was rapidly coming to the front—especially the one-piece sections.

Origin of the One-piece Section.

In 1870 Wm. Gilbert got out a patent on a one-piece box. Three of the corners were scored with a V-cut, and the ends were nailed. It does not appear that Mr. Gilbert contemplated the use of this box for comb honey. At all events, in 1873, E. H. Wyncoop of Catskill, N. Y., made and sold under the Gilbert patent of 1870 sectional honey boxes that had bee-ways. In 1874 H. W. Hutchins of East Liverpool, Ohio, patented one-piece sectional boxes, the ends of which were dovetailed together but without the insets or bee-ways to admit the bees.

In 1876 Alex Fiddes brought out his one-piece section box that was much the same as the present one on the market.

In 1876 A. I. Root introduced the one-pound section, the former sections having been made to hold three and even four pounds. In 1879 he brought out the one-piece section with square saw cuts instead of V-cuts.

In 1879 Mr. Parks, of the Lewis & Parks Co., Watertown, Wis., began manufacturing one-piece sections on a large scale.

The interesting thing in this connection is that Moses Quinby, the old pioneer who was contemporary with Langstroth, used one-piece section honey boxes prior to 1869. It would appear, therefore, that Quinby, pioneer that he was, was really the pioneer in the use of one-piece sections. But up to the time when A. I. Root introduced in 1876 the section 4¼ square, and holding approximately one pound, all other sections had been of comparatively large size—a size that was not readily salable. The 4¼ x 4¼ sections would not have been practical without comb foundation. This explains why the earlier sections were made to hold three or four pounds. Without comb foundation the combs would be built crosswise or in any direction the bees happen to start their work.

When A. I. Root introduced the one-pound box, he and many other beekeepers attempted to go one step further by making a half-pound box; but the popular demand continued for the one-pound size. Nevertheless, there seem to have been various attempts made to make bees store honey in miniature sections holding two, three and four ounces; but because at that time no one fully understood the importance of powerful colonies for producing comb honey, most attempts along the line of two-ounce sections were, to a large extent, failures.

In our December issue I described what we and others had done in the way of putting up miniature squares of cut comb honey—especially the individual-service comb honey cut up into small squares of approximately two ounces—an amount about equal to what one ordinary person would eat at a sitting; but, as I then pointed out, cut comb honey of any sort is slightly objectionable, because it is impracticable to get rid of all smear or drip still clinging to the sides or edges of the cut comb. I explained at the time that this smear or

drip would granulate after a few weeks or months, thus giving the purchaser the impression that the honey was "sugar honey"; that the smear on the full-sized combs would sometimes cause the wrapping to stick to the comb, with the result that, when it was removed, it would tear away the cappings, thus making a sticky, dauby mess.

While it is true that the cut comb honey avoids the expense of a section or a surrounding frame of wood, the cost of otherwise packing and wrapping the cut comb is equal to or more than the cost of the sectional honey box. To reduce this whole proposition to a single sentence, we probably shall never be able to get away from the sectional honey box.

Individual Comb Honey in Miniature Sections.

Efforts have been made at various times in the past to induce the bees to put comb honey in minature sections—sections that would hold not more than two or three ounces of honey. In most cases it has developed that bees would not accept them readily. You can lead a horse to water, but you can not make him drink.

In the 80's Walter Harmer, then of Manistee, Mich., developed his miniature sections of comb honey in thin veneer wooden sections. These little squares held approximately two ounces of honey, and seemed to be just the thing to present to the trade. A. I. Root, with his characteristic enthusiasm, wrote this up in the issue of Gleanings for April 1, 1888. The sections were made of shavings taken with a jack plane, shaved off from a ⅞ board. I will not go into detail now and describe the whole scheme, as it was given on page 242, April 1, 1888.

Many beekeepers essayed to try this scheme, including our present editor, Geo. S. Demuth, who was then living at Peru, Ind., and who followed so closely his teacher, A. I. Root. One difficulty that almost every one encountered was that the bees were not always agreeable to putting honey into 40 of these little squares mounted in a Langstroth frame that was hung in the hive just like a brood-frame. As Mr. Harmer explained, it was necessary to have strong colonies, a good honey flow and a strain of bees that would not object to putting their honey into very small compartments. Some of these elements were not always under control—particularly the right kind of honey flow.

Time drifted on, but apparently no one made a very great success of the Harmer individual comb honey.

In 1910 Dr. E. F. Bigelow introduced what he called the Pearl Agnes hive—a miniature hive having a miniature colony, miniature frames and miniature sections. It was designed for educational purposes to illustrate the method of producing comb honey before colleges and schools; but because the colonies were but little more than baby nuclei the small sections were not successful.

C. B. Hamilton's Method of Producing Comb Honey in Miniature Sections.

Our readers will remember that, in the July, 1922, Gleanings, we wrote up the wonderful feat—a record-breaking one, by the way—of C. B. Hamilton of Centerville, Mich., of how he produced from one colony and one queen 23 cases of 24 sections each of finished comb honey all in one season, or an aggregate of 577 finished sections. This feat was the more remarkable because this large amount of honey was the product of one queen and two pounds of bees received April 18. Mr. Hamilton was bright enough to see that these bees received so early were warmly housed. They were given warm syrup, and every attention that was possible for a comb-honey expert to give them. The queen was remarkable in that she kept the hive much of the time filled with 20 frames of brood. Mr. Hamilton was quick to see her value. He believed absolutely in a large number of bees, in ample protection, in breeding in two stories, and contracting down to one story at the beginning of the honey flow. In other words, he believed in the slogan of colonies of from 80,000 to 100,000 bees. In the particular case cited he knew he had a queen that was able to go more than half way in doing her part.

A good many, before and since, believed that there must have been some fake or mistake in the record of this queen; but S. S. Kresge, the man who owns a great chain of stores throughout the country, who is an enthusiastic amateur beekeeper and made his first money in all his life from his bees, closely cross-examined Mr. Hamilton in my presence. After Mr. Hamilton had fully explained how he did it, Mr. Kresge, who employs 10,000 people, and is, therefore, a good judge of human nature, agreed that the feat was within the realm of possibility, and that Mr. Hamilton did exactly what he said he did.

Well, now, this same comb-honey genius is the man who has recently been producing comb honey in miniature sections that are just one-fourth the height and width of the ordinary 4 by 5 sections. This, of course, makes the sections 2 by 2½ inches in dimensions.

Mr. Hamilton says that he has been able to make his bees fill these sections; and it goes without saying that he finds a very ready market for them.

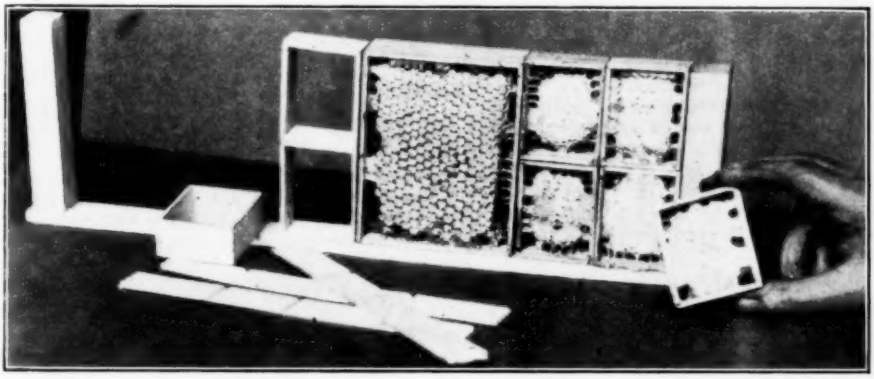
If he sells them at 10 cents retail, the public pays 80 cents a pound for this comb honey. While the sections are only one-fourth the size of the standard 4 by 5, the amount of honey is considerably less than one-fourth, since these little sections are only about ⅞ inch wide. While the 4 by 5 sections will bring 30 to 35 cents at retail, four of the small boxes will bring 40 cents. The 4 by 5 sections would contain about 13 ounces; the whole four of the minature sections would contain less than half a pound. Forty cents for half a pound would be 80 cents a pound as against 30 or 35 cents for 13 ounces of comb honey in 4 by 5 sections.

Mr. Hamilton explained to a member of our staff last summer that, in order to get the bees to accept these little sections, it is necessary to have a large force of bees, and, in addition, a good honey flow; and, last of all, that it is better to have the supers just deep enough to take in a single tier of these little sections. We are unable to understand just why the bees would not be willing to accept two tiers of these sections at a time in a standard-depth super; but Mr. Hamilton probably knows what he is talking about when he says his way is better.

The great advantage of these little sections, if beekeepers can produce them, is that they are neat and pretty, and best of all, they have no smear or drip as occurs to some extent with the miniature cut combs. They are just right for individual service at fancy restaurants and dining cars; and it goes without saying that the public will grab them up quick at 10 cents apiece. Any expert comb-honey producer who could produce 1000 of these pretty little boxes would have no trouble in finding a market. The very novelty of the thing would attract the attention of the grocer. They would find a ready sale as a confection in thousands of candy stores in the United States; they would be sold by the thousands in drug stores; they would be fine as a luncheon for automobile parties, and they would be fine for introducing comb honey in standard one-pound sections.

Mrs. Housewife would quickly see how handy the little boxes would be for company, and how nice they would be for an afternoon tea. The honey salesman would find them most excellent to show to prospective buyers. The very novelty of the thing would compel a sale.

I may be a little over-optimistic; but I believe there is a great field here to be worked out; and, in the language of David Harum, the fellow who does it "fust" in a given locality is going to reap a rich reward.



Miniature sections, holding approximately two ounces of comb honey, are here compared with a regular 4 x 5 section. These little sections are 2 x 2½ inches, therefore four of them occupy the same space in the section-holder as one 4 x 5 section except that they are narrower.

Caution.—It should be stated that not all beekeepers—perhaps not one in five—would be successful in producing honey in these little boxes. It is but fair to state, likewise, that probably not even the best comb-honey producers could produce comb honey in these boxes every season. The honey must come in with a rush. Colonies should be strong, and the beekeepers should be the best of their class. It is only fair to say that this honey will cost more to produce than standard comb honey—no doubt about that; but it is worth a trial on the part of the comb-honey man who knows his job. Every good comb-honey producer should try his hand at them. The early bird is the one that gets the worm.

THE CENTRAL EXTRACTING PLANT

By J. L. Byer

A Building Planned Especially for Handling Large Quantities of Honey

Previous to 1922, we extracted the honey at a number of yards in the buildings constructed at these apiaries when they were established. Three apiaries had no buildings, and the honey had to be brought home and extracted in a shed adjacent to our home. As this was very unsatisfactory, and some of the buildings at the outyards were old and no longer bee-proof, we decided to build a central extracting plant. This was done in 1922.

Many have asked for information as to how we built this plant. While there is little to it out of the ordinary, possibly some beekeepers might get some help from an illustration of the building coupled with a few details as to its construction, particularly so if they happen to have a site similar to the one on which we built. I am not at all mechanical and have little initiative for planning anything in the shape of a building either the outside or inside arrangements, so I shall say little about how we have arranged things inside. That is a question of adaptation. In other words, inside plans can be made to suit the ideas of the owner in accord with his particular notions.

The building is directly opposite our home with the highway between. In the illustration the highway shows plainly in the foreground. My twin boys will be noticed standing near the building on the driveway that leads to the garage, which is in connection with the extracting plant. Their light weight and light-colored togs give little contrast, and the boys do not show plainly.

Advantage of Building on Hillside.

A glance at the illustration will show that we have the advantage of a slope in the land that goes up directly from the side of the highway. We have taken advantage of this to do away with the necessity of a honey pump, and at the same time save all worries about the foundation giving way if we get a heavy load on the floor.

The foundation walls are eight feet high and except for the front walls, which show in the picture, they are four feet in the ground and four feet above. A natural gravel bed gives good drainage; so the basement is always dry and we have not even provided for a drain so far, but expect to construct a septic tank next summer for the purpose of disposing of water from wax-rendering operations, scrubbing the floors, etc.

The main building is 48 feet by 24 feet, with the garage, as shown, built on the south side. An easy grade to the garage allows heavy loads to be taken in with ease, and as the extracting floor of the main building is on a level with the highway, we back right in with trucks when loading cars of honey. Honey runs from the extractor in conducting pipes to tanks in the basement. The basement floor is of cement and, as already intimated, we do not worry about the floors giving way. We have had 100,000 pounds of honey there at one time and as much more would not have done any damage.

Heating the Honey Room.

While the basement is dry, yet we take no chances, and as long as the honey is in open tanks a small coal stove is kept going night and day, and everything is kept literally as dry as a bone. As this stove uses only a scuttle of coal in 48 hours, the expense is not much. While this heat might not be necessary, I am sure it does no harm, and it pays for itself since the honey in the tanks is kept warm until put up in pails. Being warm and thin it is much easier to put up as desired. We weigh every pail on a good pair of computing scales. While we use these scales only for weighing, I think they pay for themselves. With the warm honey very rapid and accurate work can be done with scales of this kind. These scales had formerly been used in a big grocery store, and I bought them at a fraction of the original cost. This explains why we have computing scales instead of a smaller machine that would do the work just as well.

J. L. Byer's new central extracting plant.

In one corner of the basement we have a room 12 feet by 16 feet that we use for wax-rendering and for storing any diseased combs that may be found. It

is absolutely bee-tight, thus saving us a lot of worry. A three-horsepower steam boiler supplies heat and steam for wax-rendering, the live steam being conducted into a wooden vat that holds about 40 gallons. Seven large windows in the basement supply abundant light and a ready means of ventilation when needed, as all are on hinges and swing up to the ceiling as required.

The main extracting floor is also well lighted, and the attic, which is used for storing light articles, has a window in each end of the building.

Electric Power for Extracting.

When we built we fully expected a hydro-electric power line to be built past our door in the near future, so we made but temporary arrangements for the tanks in the basement and for the extractor on the main floor. A gasoline engine was used for the two seasons the building has been in service, and now I am glad to say that the electric power line has been built and that high-power service is within 10 feet of the extracting building. The engine has been taken out of the basement where it took up tank room directly under the extractor, and was in many ways a nuisance, for no matter how much care was used, oil was always in evidence near the engine. A two-horsepower electric motor will be installed within a few weeks, and at present everything is in a state of disorder preparatory to the change from the old power to electric energy. Possibly at a later date I may be able to give details as to inside arrangements. I am open to suggestions along that line, as final arrangements will not likely be completed before the middle of May.

We also have a central plant at the Binbrook apiaries south of Hamilton where gravity is used to conduct honey from the extractor to the tanks in the basement. As there is no hill there different arrangements were necessary than where we had the hillside at our disposal. But in this case as well as at home the honey all goes to the basement on the cement floor, and the honey room is heated by natural gas to any temperature desired, making it handy for rapid clarifying of honey and putting it up in containers. In this building also the truck loaded with honey in the supers is driven inside and the main floor is on a level with the platform of the truck.

Markham, Ontario.

SOME PACIFIC COAST BEEKEEPERS

By Dora Stuart

Commonplace Things are Glorified and Work is a Pleasure to One who has found His Job

From the beginning of time, Man's principal objective has been to live without work. Failing to achieve this fool's paradise, many have compromised with necessity by preparing themselves to do only the easier and more ornamental part of the world's work, but it is work nevertheless. A few have solved the age-long problem by becoming so enamored of their particular field of endeavor that work exists only as recreation, pastime, just play to them.

R. Deimer belongs to that fortunate class. He loves his job. More than that, his job loves him and responds to his efforts.

"Not much of a job," the uninitiated might remark; "just peddling! Anyone could do that."

So they can and do. Peddlers come and peddlers go, but Mr. Deimer stays with his job. He peddles among the same customers today on whom he called 10 years ago and, most important of all, leaves his wares behind. And the customers, knowing he will call, save their orders for him.

When Work Becomes Play.

If he were selling books that nobody reads, or some sort of mechanical labor-saving device that requires all of one's time to keep in working order, or fake jewelry, his job would become so laborious he would literally die of overwork. But Mr. Deimer has chosen that most delectable of all foods offered for human consumption, HONEY. His visit, like Christmas, is an annual event, and unless the honey gives out, the small boy's wish comes true, and Christmas comes twice, three times, or as many times a year as Mr. Deimer finds opportunity to appear with his honey in the role of Santa Claus. He is considered a friend of the family. His welcome is assured and the friends he has made are scattered from Marysville to Red Bluff, an area of over 7000 square miles lying in five counties in northern California.

Now, problems are not solved, no matter how happily, without the expenditure of considerable time and thought, and HOW one arrives, is always more interesting than the mere fact of one's arrival.

Building the Foundation of a Business.

Mr. Deimer began his peddling career as a measure of self-defense, to make his

honey crop yield an adequate return for the time and skill expended. At that time honey was not carried in stores because there was no call for it; there was no call for it because the general public knew nothing about it; the public knew nothing about it because honey had never been offered for sale by the grocers. It was this vicious circle of ignorance on the part of the consumer on the one hand, and indifference on the part of the grocer on the other, that had to be broken up. A honey-demanding public must be created to absorb the supply, the only alternative being to continue to let the crop go at from five to seven cents to some broker's buyer canvassing the field. There was no way to accomplish this other than to carry honey to the door of the consumer.

As a matter of fact, that was no small undertaking 10 years ago when the good-roads campaign was scarcely begun in northern California, and during the winter months when peddling was in order the roads were all but impassable. Therefore a price had to be set that would cover the expenses of hard traveling, wear and tear on the machine, and a man's time to sell the honey.

Mr. Deimer fixed that price at 20 cents a pound, his special packages being a five-pound bucket at one dollar and a ten-pound bucket at two dollars. Even with the handicap of bad roads and merchandise but slightly known, the venture was successful from the start, and by the second season Mr. Deimer was selling all of his own product and calling on his neighbor beekeepers for more to supply his customers.

He takes the position that the retail price should be at least twice as much as the wholesale price, counting the wholesale price at 10 cents a pound, the extra 10 cents a pound being necessary to cover his wages, gasoline, labels and literature in educating honey eaters in their own homes.

Others Are Benefited by this Pioneer Work.

Even at that, Mr. Deimer has been carrying a burden of labor and advertising out of proportion to his profits and the amount of business transacted, and from which beekeepers at large reap the benefit. The circle began to unwind at last, or rather reverse itself, and the demand created by Mr. Deimer in the past 10 years has resulted in honey being placed in salable form on the shelves of the grocery stores in his territory by apiarists who sell at a price sufficiently low to enable the grocer to undersell the man who caused the demand.

But apparently that did not disconcert Mr. Deimer who peddled right on, increasing his sales each year at his own established price, at the same time reducing the expense of peddling by reason of the fine highways that now intersect the country in all directions. He does not seek to increase his territory. Rather he strives to cover more thoroughly each year his old routes where the pioneer work has already been done, and where increased consumption among his customers proportionately decreases the cost of distribution.

He does not consider a day's work profitable that does not dispose of from 40 to 50 dollars worth of honey. At that rate there is from 15 to 20 dollars as wages for himself and "Lizzie" Ford, to say nothing of reimbursement for his exceedingly attractive label and the new honey literature which he manages to have on hand at all times for distribution among his friends and customers.

Mr. Deimer operates about 200 colonies of bees, the largest yard being situated in a romantic spot on the Sacramento River near Chico, known as Jenny Lind Bend, and a smaller yard at his home about 10 miles distant. By placing the colonies at Jenny Lind Bend on trestles the bees may be left in that location all winter and be free from the danger of high water. This saves the expense of hauling them to and from their summer pasture, while the early pasture on the river bank and, later, the fruit-bloom pasture in the orchards across the river, furnish all the feed necessary to bring the bees into a strong condition for the real honey flow.

Interlocking Co-operation.

A tenant farmer on the Jenny Lind Bend tract of land co-operates with Mr. Deimer in guarding the bees against marauders and boys who fish and swim in the river at that point. He has also protected Mr. Deimer from selfish beekeepers who from time to time offer large sums as rental for the site he occupies.

Indeed everything connected with Mr. Deimer's life is a co-operative factor in it. His bees co-operate with his young orchard, pollinating it and furnishing the necessary funds for cultivating and bringing into bearing its 20 acres of prunes and almonds; his chickens co-operate with the bees, the 100 white leghorns doing their best to tide over the dull season in honey by supplying the market with eggs when the price is high; the Gyp corn and other forage grown between the rows of trees in his orchard co-operate with the chickens by keeping down feed bills; even the label "sun-gold" on the cans of honey are co-operative. They guarantee the quality of the honey and in color reflect the pale

yellow of the contents when the lid is lifted. It is a symbol of an enterprise started through necessity and developed through a genuine instinct for salesmanship to what is really an educational campaign, benefiting both consumer and producer.

"But," one may object, "the consumer pays for all this salesmanship and educational work." Of course he does. He always has paid and always will pay. He pays dearly. He pays in advance and for much that is of no value. The point is, that in this instance he gets what he pays for—a staple at a stable price, with the knowledge that he can renew the supply, whenever the habit for eating honey grows clamorous, right at his door. He is responding to his education. He, too, is co-operating with Mr. Deimer, who is patiently awaiting the time when his 20 acres of orchard will come into full bearing and do its share of co-operating, thus giving him more time to spread the gospel of honey in an even more extended educational campaign.

Apiary located in prune and almond orchard in California, where R. Diemer combines bees with prune and almond production.

Ladies who expect to take advantage of the year 1924 would do well to remember the domestic qualities that have made the first unit of Mr. Deimer's house so homelike, even though he dwells there in single blessedness.

Chico, Calif.

LEARNING AND UNLEARNING

By Leslie Burr

Building Colonies up for the Honey Flow in Uniform Condition

I was once asked by a large honey producer if I had ever been able to get an apiary in such condition that I considered every colony in the yard was at its best. I had to admit that I never had. That was about 20 years ago, and if again asked the same question my answer now would be the same. However, I now would qualify my answer by saying that I could come pretty close to having all colonies equal as to strength at the commencement of the honey flow. That is considerably more than I was able to do in the old self-satisfied days when I was producing honey in Illinois, and thought I knew just about all there was to know about practical beekeeping. In the old days I kept all hive records in my head, or rather tried to. I had no regular schedule of working the hives, nor definite system of work. When I thought something should be done I did it if I happened to feel like doing it—all of which constituted a habit of mind that was not easily broken.

But to come back to the matter of getting all colonies in a yard in the best possible condition for the honey flow. In a previous article I told of methods of caring for queenless colonies and described brood-spreading as I consider it should be done. I have also referred to the matter of keeping pencil records on the hives, and it is this latter matter that I now desire to discuss.

As I have said, I consider about a hundred colonies as the average number a man should be able to work in a day, preliminary to the honey flow. Of course, if the day is good, the bees good-natured and the operator feels like doing a big day, many more colonies can be worked.

Rapid Work in the Apiary.

For example, I know of two occasions in Cuba when different beekeepers worked 240 colonies in a day. As the time spent in the apiary was about nine hours, and as fueling the smoker, trips to the honey house and arranging supers, combs, etc., on the wheelbarrow probably used up about an hour during the day, that left eight hours of actual hive work,

which means that but two minutes of average actual time was spent in working each hive.

As to the attention each hive received, in every case it was ascertained whether or not the colony had a laying queen. Every queenless colony, or, rather every colony that was without a laying queen was given a frame with eggs and larvae, and whenever possible queen-cells were given those needing them. Brood-spreading was done when deemed essential, honey removed from the brood-nest, or stores given as the occasion demanded. Frames of brood were taken from the colonies that could spare them and used to build up the weak colonies, and at the completion of the working of the colony a pencil record of the condition was noted on the hive cover.

Had the records of the hives been kept in a book, how long would it have taken to turn to the record of each of 240 colonies and read them, and then later note the new records in the same book? Well, from what I have seen of book-record beekeepers, I think that most of them, if they had to read and enter 240 hive records in a book in one day, would have little if any time left for the working of the bees.

Handling Non-spacing Frames.

Before describing the actual manner in which records, according to my ideas, should be kept on hive covers, I want to say concerning the 240 colonies that were worked in a day, that the frames were of the non-spacing type. The top-bars were free from burr-combs, and, most important of all, the frames were stapled at the bottom of the end-bars.

Frames that are non-spacing can be crowded closer together, thereby making more space for the first frame that is to be removed; and the staples on the bottoms of the end-bar make possible the rapid removal of the frame without danger of killing bees. In spacing frames that are not self-spacing, the fingers are used as spacing gauges, and with a little practice the spacing can be done very rapidly and accurately.

Keeping Records on Hive Covers.

In writing the records on the covers a carpenter's lead pencil is best, as it is heavier and stronger than the common pencil. First, of course, before working a hive the previous records are noted; if the colony is found to be all that it reasonably should be after being examined, the notation is merely the date and an "O. K." Should the queen be slow, the notation would be "q. slow." If the colony is without a laying queen, the notation is "e+l" (meaning that a comb of eggs and larvae was given), and, of course, the top-bar of the frame of eggs and larvae given is also dated. The advantage in dating the frame is that when the hive is next worked, all that is necessary to be done is to take out the dated frame, and the story is there told; for if the colony has a laying queen eggs will be found; if the colony be still queenless, queen-cells will be there; and if a virgin queen is in the hive, the empty cells will be found in a polished condition.

Where a colony has been queenless, the record generally appears something like this:

"8/10, cell e+l.
"8/20, cell down, e+l.
"8/30, lay.
"9/9, O. K."

End-spacing staple driven into lower end-bar instead of at the top to prevent crushing bees between end of frame and hive when taking out or putting back combs.

The figure "8" in the foregoing stands for the eighth month and the following figure represents the day of the month.

Where a colony has a failing queen the record would appear something like this:

"8/10, queen slow.
"8/20, queen slow, gave 2 fr. brood.
"8/30, slow.
"9/9, cell down, e+l.
"9/29, lay, O. K."

The record of an extra-good queen would be noted about as follows:

"8/10, booming, took 3 fr. brood.
"8/20, good.
"8/30, took 2 fr. brood.
"9/9, O. K."

The record of an average colony would be merely a series of O. K.'s as:

"8/10, O. K.
"8/20, O. K.
"8/30, O. K."

The foregoing examples cover about all that is ordinarily necessary to record in the way of pencil notations—of course, supplemented by the stone signs for the colonies that are without laying queens—during the time leading up to the honey flow.

The extracting season is another matter, and calls for a different procedure; and the same is true in the matter of making increase.

No Time to Use Hive-seat.

It will also be noted that in working the hives I have made no mention of hive-seats, that is, seats for the apiarist

while working the hives, and I think the reason is apparent. It is not the sitting-down kind of bee-work that I have described. The way to work a brood-nest, if the hive is not on a bench, is to drop down on one knee at the side of the hive, and then work the colony in the same businesslike manner that a man follows when he is husking corn or pitching bundles of grain to a threshing machine. But not all beekeepers work their bees that way, especially small beekeepers.

I know of one young man who hired out as an expert beeman, that was sent out to work a yard of 50 colonies. When he returned that evening he was asked how he got along. His reply was that he got along pretty well and thought that if the weather remained good he would finish up the yard that week, as he had gone through 10 colonies that day.

I recall another instance where three men went out to a yard of 400 colonies. The 400 colonies were worked that day. One of the men, who had represented himself as a thorough beekeeper, worked 18 colonies, the other two men worked the remaining 382 colonies; and, as there are always more or less robbers about in a yard of 400 colonies, and as it happened on this particular day robbers were quite plentiful, the result was that each of the 18 colonies that "the thorough beekeeper" worked was so badly robbed and demoralized that they were in no condition for the approaching honey flow. As a matter of fact they never did fully recover from the ordeal they had been subjected to until after the honey flow was over for that season.

As I look back now, I doubt whether the man realized the colonies were being robbed out. I make this statement now in the light of later experience, as, for example, during the past summer I have had considerable trouble in teaching one young man how to avoid, control and recognize robber bees. Yet I fully expect to make a beekeeper out of him. It takes the best of us several years to become even passable beekeepers, and some people just can't make the grade unless they have some personal instruction. The older we get the more tolerant we become to the blunders of the novice.

The out-apiary is a desolate-looking spot in winter, but within the hives the bees, packed snug and warm, are already preparing for their big job of spring brood-rearing soon to begin.

FROM THE FIELD OF EXPERIENCE

REMOVING BEES FROM CELLAR

How to Prevent Undue Excitement and Drifting on First Flight

Removing bees from their winter repository to their summer stands is not without its difficulties. If, however, attention is given to selecting the right kind of weather for moving the bees, and also to the proper method of releasing the colonies after they are placed on their summer stands, these difficulties are reduced to the minimum.

Here at Medina we aim to remove the bees from the cellar along about April 1. If it were not for the fact that cellar-wintered bees in this latitude become restless the latter part of March, it would seem advisable to leave the bees in the cellar until about April 15 to avoid a cold spell that almost invariably comes during the forepart of April following a warm spell. On the other hand, the bees when removed about April 1 gather early pollen, and the colonies get brood-rearing starting on the up-grade ready to reach their peak of strength about the first week in June when the main honey flow from clover usually begins. We must constantly keep in mind the fact that populous colonies of bees of the nectar-gathering age are what count in securing the maximum crop of honey.

We consult the weather map and aim to remove the bees from the cellar during a cool, cloudy day just prior to warm weather. We start work in time to finish a little before dusk.

As mentioned in a previous article in Gleanings our bee cellar is awkward to get at. We have to load the hives of bees on to hand-trucks and wheel them through the warehouse basement on to an elevator, then out to a platform to be loaded on the large automobile truck. It is necessary in thus handling the bees to use entrance-screens that fit into the entrances of the hives in a V-shaped manner. One hive-staple is sufficient to hold a screen in place. The bees are handled as carefully as possible. After being loaded on to our large truck and hauled to the apiary, the hives are placed on stands and left until evening. The object of leaving the bees until evening before releasing them is that they may become quiet. When releasing them a smoker and hive-tool are required, and also an entrance-reducer for each hive of bees. We blow a little smoke into the entrance, remove the screen, and put the entrance-reducer with the smallest entrance in place. This smallest entrance to the entrance-reducer is ⅜ x ¾ of an inch. A few bees may come out of the hive but on account of the approaching darkness they will very soon go back. The following morning or as soon as flying weather comes, bees will work out gradually. By following this method of releasing the bees, drifting is usually avoided. It sometimes happens that the day following the moving-out day, the weather becomes unusually warm, and the bees anxious for a flight rush out and drift to other hives. Bees that have wintered well do not rush out so readily as bees that have wintered poorly.

The main things to be kept in mind are to select a cool, cloudy day for removing the bees, and to leave them screened in until evening; then, after removing the screens, put the entrance-reducers in place.

Some claim that it is advisable to place colonies of bees on the stands they occupied the previous summer. By numbering the hives and stands alike this can be done without much trouble, especially where the bee cellar is at the side of, or in the center of the apiary, in which case bees are carried to and from the cellar. The plan of having the bee cellar convenient to the apiary certainly has its advantages.

As stated in an article appearing in November, 1923, Gleanings, we expect to obtain some data on a number of colonies carried to and from the bee cellar by hand, as compared with colonies hauled to and from the bee cellar in a motor truck, as to their condition in the spring and the amount of stores consumed. The colonies used in this experiment were carefully weighed last fall, and as soon as the bees are removed from the cellar on to their summer stands we expect to weigh carefully the colonies that are being used in this experiment in order to determine the amount of honey consumed and the general condition of the bees. We are of the opinion that hauling bees to a winter repository does not improve their wintering. Some claim that it does little if any harm. We want to know the truth regarding the matter, and as soon as we arrive at the truth we shall advise the readers of Gleanings.

Just a word regarding the management of bees after being removed from the bee cellar might not come amiss, although, strictly speaking, it would not belong to this article. As already stated, there usually comes a cold spell of weather in April following a warm spell.

During the spring of 1920 we had a cold period that continued practically through the month of April, there being only three or four days during the month when bees could get out to gather pollen and water. Since the covers were tightly sealed the previous fall, if the bees are supplied with an ample amount of stores to last until settled warm weather comes the following summer, it is not advisable to look into normal colonies, and crack the propolis on the inner covers before settled warm weather comes. When the inner covers are thus removed a considerable amount of colony heat is lost through the tops of the hives, and this means wasted bee energy. As a matter of fact, in a well-managed apiary where colonies have food chambers and a sufficient amount of comb space for the queens to occupy, it is unnecessary to look through the colonies more than once before the main honey flow in June.

Medina, Ohio. M. J. Deyell.

UNIFORMITY IN EQUIPMENT

A Plea for Better Standardization in Hives and all Hive Parts

One of the things of greatest importance in practical beekeeping is to have every part of a beehive an exact duplicate, as to size, of that part in every other hive.

It may be of little moment to the man who has only three or four hives that every one of them is made a little differently from the others and that the frames of hive No. 1 will not quite fit in hive No. 3, but such a condition is intolerable to the man who is making a business of beekeeping and must produce honey at the least possible unnecessary expense for labor.

The beekeepers of the United States and Canada are especially fortunate in not having the multiplicity of sizes of frames that seems to prevail in European countries. There are, to be sure, localities where special frames have been in use a long time and will continue to be used. There are also in use several of what might be called experimental variations in frame sizes. A great deal of effort has been made by inventors and manufacturers to get some of these into common use, but for the most part this effort has fallen flat. Some men still use them and will continue to use them, but many even of those who like them have given them up because of the various advantages that come from using standard hives and frames.

What is a "standard frame"? Broadly speaking, there are only two frames to be considered in connection with commercial beekeeping in North America. One of these is the Langstroth frame, generally known in its present form as the Hoffman frame. The recent agitation in favor of larger hives may have brought into use a considerable number of the Quinby frame, or its modification having Langstroth length and Quinby depth. But undoubtedly no other frame is used anywhere nearly so extensively as the Hoffman. All dealers in beekeepers' supplies handle them and some sell nothing else.

In modern hive-making, the frame is that upon which everything else should depend. Other parts of hive equipment may vary to a considerable extent without affecting greatly the principle of interchangeability, but when the size of the frame is changed it is a deathblow to this principle. In a large apiary the frame that is in one hive today may be in any one of a thousand other hives or supers tomorrow, and it must fit there.

It is generally assumed that our hives and their parts are made according to certain standards and that hives and frames of the same style are interchangeable, no matter where they were made. Unfortunately, this is no longer true. Our manufacturers appear to have lost sight of the extreme importance of keeping to accurate standards of size in the matter of hive equipment, so that, strictly speaking, interchangeability no longer exists. Frames made by some manufacturers will not fit hives made by others, nor even, in some cases, hives made by themselves in former years.

The Langstroth frame, as modified by A. I. Root was 9⅛ inches deep and 17⅝ inches long, with a 19¼-inch top-bar. The length of the top-bar was then shortened so that end-staples were required. These are now being discarded by some manufacturers and many individual beekeepers, the top-bar being made 19 inches long. I will say, in passing, that I very decidedly prefer these long top-bars.

I do not remember that I ever saw a Hoffman frame that varied sufficiently from the regular 17⅝ length to make any trouble, but when it comes to the depth of the frame and its position in the hive, there have been some inexcusable variations.

The great feature of Langstroth's invention was the bee-space, the frame, supported by the ends of the top-bar, being a bee-space from the ends of the hive, the bottom-board below and the cover, or the frames of another story, above. In practically all modern hives there is a bee-space above the frames.

Now it is apparent that this bee-space depends not only on the depth to which

the rabbet in the end of the hive is cut, but also on the thickness of the projecting end of the top-bar which rests in it.

For a number of years apparently, this remained the same with all manufacturers. We have in use nearly 10,000 of this style of frame, some bought new from different manufacturers, but many came with bees or used hives we have bought at various times. There are many variations in the way they are made and they evidently came from several different makers. In nearly all of these though, the ends of the top-bars are .3 or about 9/32 of an inch thick. Only a small proportion are as thick as .325 and none any thicker. This leaves just a bee-space above the frames. We got a number of new frames in 1922 which were .325 thick. But in a lot of new frames received in 1921 from another manufacturer, the ends of the top-bars were 12/32 of an inch thick. When these were put into our old hives, the frames stood so high above the rabbets that there was not a bee-space above them. Bees were mashed, the covers propolized fast to the frames, and when a super was tiered above them, the frames were glued together. We had to re-saw all these. We were able to do this because we had the machinery for it, but I have wondered how much trouble these frames made for others who did not have these facilities.

I will admit that a thicker projection makes a somewhat stronger frame, and it would be still stronger if it were made still thicker. It would require a hive made to fit it, but so does the other.

[This is the penalty we pay for progress. Those who purchase entirely new equipment demand the stronger projection, while those who purchase new equipment to be used with old are inconvenienced by the improvement. It is unfortunate that the projections of the top-bar were formerly made so thin and frail. This was done before the days of extensive out-apiary operations and rough handling of combs in hauling.—Editor.]

From another maker we received frames that were only 9 to 9⅛ deep. This was not such a serious fault to us, as in our dry climate many of our old supers have shrunk until they are below standard. But I am looking to more trouble from brace-combs when these frames are used in supers of standard depth.

A worse fault in this lot of frames was that the bottom-bars were only ⅝ wide, a return to a style discarded years ago. I have heard bitter complaints from beekeepers who got these narrow bottom-bars, which are not at all satisfactory for extracting-frames.

Grand Junction, Colo. J. A. Green.

DON'T CONDEMN NEW IDEAS

Formalin Used 23 Years Ago for American Foul Brood

In Gleanings for February Mr. Crane comments, in "Siftings," upon Mr. Holtermann's experience in trying to get help to use a new style of uncapping knife. He also gives a little of his own experience in trying to get his two helpers to use a new style of knife for cleaning sections. He then says, "These incidents remind us that we should be slow in condemning new implements or methods until we have become thoroughly familiar with them."

If it were not for the fact that beekeepers are generally ready to condemn all new discoveries, unless some one forces them to investigate, there would be a more rapid progress among the fraternity. It is on account of this very fact that beekeepers, for the last 23 years, have not been treating and saving their combs affected with American foul brood. Some of the beekeepers will probably sit up and want to know "how I get this way," but if they will turn to Gleanings for April 15, 1899, page 310, they will find the proof.

In 1899 J. H. Martin, known as Rambler to most of the older readers of Gleanings, took a ramble through northern California, then across into Oregon and Washington. It was on this trip that Rambler visited Dr. Chase of Salem, Oregon, and found that he was treating his combs instead of burning them when affected with American foul brood. Rambler describes Dr. Chase's method of treating diseased combs as follows: "Whenever you find foul brood in a comb, uncap it and wash it all out under a faucet of water running with considerable force. When thoroughly washed, shake out the water as clean as possible; then make a solution of one teaspoonful of formalin to one quart of water. Spray the combs full of this solution; place combs in a pile, allow them to remain two days; then shake out the solution and return the combs to the hive."

It is readily understood that a solution of water and formalin will not fill the cells of a comb rapidly, much less penetrate the cappings on cells of honey and brood. If the water-formalin treatment had been taken seriously by the beekeepers, who knows but that the alcohol-formalin or some other more efficient method would have been discovered years ago.

Twenty-three years later the editor got the results of Dr. J. C. Hutzelman's experiments. Who knows what future experiments for treating American foul brood will reveal?

Sioux City, Iowa. C. S. Engle.

SIFTINGS

by J. E. Crane

I believe the most valuable article in the February number of Gleanings commences on page 86 on "Sterilizing Combs Cheapened," by E. R. Root. He makes the whole subject so plain that there ought to be no excuse for harboring foul brood of any kind. However, after reading the article, I began to wonder where one could get the formalin solution since it is unsafe to use ordinary denatured alcohol, and grain alcohol can be obtained only by going to Europe for it; but after looking over the advertising pages I found Mr. Hutzelman's ad on page 67, when I learned one can get the solution already prepared with tank, wire basket, frame-lifter—the whole to cost only $12.50.

One of the things that has troubled me has been the fear that the solution would not enter all the cells when the combs were immersed, but a short editorial on page 73 says that it will, for they have tried it. Good! Thank you.

* * *

Leslie Burr treats the spreading of brood in a sensible way, on page 85. His illustrations are clear, and to the point. The "spreading of brood" is apt to be very fascinating to a young beekeeper, but in practice is very apt to prove a boomerang, defeating the very object he is after. But the beekeepers of Cuba, southern United States, Hawaii and even California, have in their warm climates much the advantage of us in the North in the spreading of brood. With us the weather may be warm today and we are tempted to spread brood, when tomorrow it may turn so cold that a colony can not even protect all its brood before being spread.

* * *

When I read E. W. Wooster's article on page 90 I began to feel a heavy, sinking feeling about my heart. The idea of destroying all our bees and buying package bees to save a few paltry dollars! No, sir'ee. I believe our good friend Wooster is writing from theory rather than experience. He says some seasons are so unfavorable that "90 per cent of all the colonies are made up of bees which had nearly all emerged before September, and in any case would die before breeding time in the following spring. Of course such colonies as these are utterly worthless to carry through the winter." Some years ago I had a yard in exactly this condition, so far as I could judge. I expected to meet with heavy loss, but great was my surprise to find the yard the next spring in fair condition, although not so strong as in some other years. The facts are, bees stop breeding in August because no nectar is to be had; they fly from their hive but little and do not wear out as fast as when working hard, and so live longer. See! There are compensations. No nectar, no brood. No brood, no work. No work, longer life.

* * *

That illustration of a comb of American foul brood on page 87 is surely true to life, or death. It reminds me of some combs I found 56 years ago this coming spring in a hive I had bought the previous fall. I can almost smell it now. If the Hutzelman treatment will cure combs like that, it will cure any we are likely to find.

* * *

That South Dakota bee house, shown on page 91, looks like those used hereabouts 75 years ago. It is a good deal better than nothing as it protects from the cold, raw winds. But wouldn't it be better to protect the bees from cold and changeable weather by giving them an underground repository where they can spend the winter days in comfort?

* * *

Those little Indian bees described and illustrated on pages 92 and 93 are certainly interesting if not profitable. The illustrations are so good I feel as though I had seen them with their bands of white hair across their backs. When I think of the many species of bees, it would almost seem as though the good Lord tried many times before he succeeded in making the best of all bees, *Apis mellifica*.

* * *

On page 96, W. S. Pangburn tells of his disgust that people will buy cheap glucose syrups rather than honey. Don't blame him; we all feel much the same way, but so long as the glucose manufacturers are able to send out good-talking salesmen while beekeepers are waiting for an offer for their honey or sending it to the city to be sold on commission, we shall doubtless remain in an unhappy frame of mind.

* * *

Three lectures on bees and honey by radio! Two to increase production and one on honey to increase consumption, I presume. This is better than all on production. See page 108.

FROM NORTH, EAST, WEST AND SOUTH

In Southern California.—Another month has passed in Corona with very little rain, in fact, practically none. February came in dry, and today (February 5) there are no prospects of any rain. Bees are reported to be in a great variety of conditions. But where one man reports his apiary to be in good condition I think a dozen report the opposite. The season is generally backward, with very little grain showing much growth. Vegetation in general is showing the need of more moisture and warmth. Cool to cold nights were the rule during January, this being very noticeable in the number of nights that the lemon growers lit their smudge pots to protect the small lemons. It has been found that the small lemon, the one about the size of a pea, is very susceptible to frost. If it is chilled, it will drop a little later and then eight months after, in the hot days of summer, when there is a great demand for lemons, Mr. Lemon Grower is likely to find himself short of fruit. This is not unlike the beeman who neglects his bees during the winter and early spring. He realizes his mistake only when he is short on production just before marketing time.

From statistics I find that the month of January just passed was the driest in Riverside County for 20 years. The rainfall was only .15 of an inch. January usually brings us a considerable amount of rain, the average being 2.33 inches. The records for the past 48 years show that the rainfall before and after February 1 averages nearly an equal amount. In our immediate section that would mean about 4½ inches more for this season. There have been seasons when a light rainfall up to February first was followed by an amount of rain that brought the total for the season up to or above normal. One very noticeable example was the season of 1883-84, that having had 4.06 inches up to the first of February and 18.68 inches of rainfall after that date. Here's hoping that this may be one of California's very unusual seasons.

We are informed that the Superior Honey Company, which lost its warehouse by fire last summer, is to build a warehouse and have headquarters in Los Angeles hereafter. And thus the big cities become the business centers. What their future plans are as to production the writer does not know, but for the present they will probably operate their large apiary holdings around Riverside as they have done for the past several years. Supplies will also be handled in Riverside.

The Riverside County Beekeepers' Club held its annual meeting and election of officers at the Farm Bureau office, Riverside, on February 4, with about 40 beekeepers present. The principal event on the program was a talk by that veteran apiarist, J. D. Bixby of Covina, who had as a topic, "Big Results in Feeding." He prefaced his remarks by saying that the title of his talk was a misnomer, as big results were not attained by feeding, although we often get satisfactory results. His remarks were appropriate and timely and gave those present some good advice. Feeding a solution of half honey and half water or half sugar and half-water has proved to be the best. It was recommended that this solution be fed in the combs.

The election of officers resulted in the selection of R. Powell, president; A. F. Lohrli, vice-president; Will C. Reeves, secretary and treasurer, all being Riverside men.

Reports on the general conditions varied all the way from the fellow whose bees were starving to the man who wanted to buy several hundred light colonies so that he could use about three hundred combs of left-over honey; also, from the fellow who was going to make a crop to the discouraged one who thought the game was up for this year. Anyway, we had a fine meeting and the reports showed a good membership roll. Everyone had a splendid visit and all felt that the old club is a very worthwhile institution.

L. L. Andrews.

Corona, Calif.

* * *

In Northern California.—The drought in our section has been broken by a fine rain, which fell generally over our portion of the state. Although some localities had as much as six and seven inches falling over a period of three or four days, it is safe to say that nearly all of this rain soaked into the ground. Dry creek bottoms that would ordinarily have streams running for several days after a storm of this kind dried up a day after the rain stopped. A condition such as this indicates how dry the country was and also that more rain is needed before normal winter conditions have been reached. Warm weather, conducive to vegetative growth, prevailed for the week following the rain, and bees have been most active on pollen-bearing plants. Our beekeepers have as yet no

cause for worry regarding the season's prospects. There are still several cars of amber and light amber honey on hand, which are being held at prices ranging between 7 and 10½ cents, with very fair prospects of being moved at these figures before the 1924 crop is on the market.

In the annual report of the director of Agricultural Extension of the University of California, College of Agriculture, for July 1, 1922, to June 30, 1923, it is estimated that for our state at least one colony of bees is needed for every five acres of deciduous fruit trees, and that the presence of bees in this proportion increases the fruit crop from 10 to 100 per cent, according to the variety and also results in more perfect fruit being formed. It is stated that the beekeeping industry is gaining impetus in the state on this account. In Placer County alone 705 colonies were placed on 87 farms for the purpose of making the prune and apricot orchards more productive.

The report states further that several farm bureaus have organized beekeeping departments which study various phases of beekeeping, resulting in the employment of improved methods on 184 farms involving 2370 colonies. Since the extension school of December, 1921, there has been an increasing demand among beekeepers for this kind of instruction. In fact, at least five counties have requested such schools, but the College of Agriculture states that it has been unable to supply the necessary staff for instruction.

During the year several bee clubs were organized with an enrollment of 45 members of which 30 members had 139 colonies. As a direct result of this club work nine farms improved their stock and equipment, resulting in the standardization of equipment for 500 colonies. The report does not state whether there still exists a correspondence course in beekeeping. There were 32 correspondence courses given during the year, and a new one has been added, entitled "Farm Bookkeeping and Cost Accounting." It is not known whether this course would prove helpful to the beekeeper. It might be stated that the U. S. Department of Agriculture collaborates with our College of Agriculture in the agricultural extension work as outlined above. M. C. Richter.

Big Sur, Calif.

* * *

In New York—Beekeepers throughout America are always alert for new and practical ways of bringing honey to the attention of the public. Yesterday (February 6) the Wayne County Beekeepers' Association of New York, largely through the efforts of Mr. and Mrs. Deroy Taylor, held a meeting in the interest of honey that in my opinion is well worth the emulation of other beekeepers' associations.

The occasion was the annual meeting. All business was concluded by 3:00 p. m., when the honey program began. A special invitation had been sent to all the women's organizations in and near Newark, N. Y., in addition to an invitation to the general public to attend. A large room was well filled to start proceedings. The writer gave a 30-minute paper on "Facts About Honey," in which he told of its physical and chemical nature, its special virtues as a food, why it is superior to granulated sugar and other foods in its class, and finally some uses of honey. Dr. E. M. Rodenberger, president of the Association, then set forth the excellence of honey from the medical man's point of view, setting forth clearly the why of the goodness of honey. Then it was time to eat.

In the meantime a long, large table had been spread with snowy whiteness and heaped with a great variety of good things to eat. There were cakes, cookies, pies, preserves, sliced bananas and grape fruit, and all of these things were prepared with honey. Hot coffee was served and sweetened with honey. A feature of the display was a 60-pound can of granulated fine clover honey from which the top and one side had been cut out. It didn't take much urging to get people to help themselves to these refreshments!

Such a program can be put on by any beekeepers' association, and it will not only do much to promote the use of honey but it will help greatly to dispel much of the popular misinformation about this product.

Bees apparently are wintering well in New York. The winter has been unusually mild; but, as we have had no snow, clover can't be in any better than average condition.

Blossom Sweet Honey has been introduced into the Chicago market and also into eastern Pennsylvania this past month.

The honey and water anti-freezing mixture is getting a fairly thorough test throughout the United States this winter. We intend to continue with our experiments in this line here at Cornell, and would appreciate reports from beekeepers anywhere who know of instances where this solution has not given satisfaction and why. We should take every precaution to safeguard this use of honey for the beekeeping industry.

Ithaca, N. Y. R. B. Willson.

In Michigan.—As a result of the publishing of a short article on the use of honey solution for radiators, much correspondence has been received at this office recently.

The article mentioned was distributed to all Michigan papers through the cooperation of the Publicity Department of the college and was also given to the Associated Press and copied by Chicago and Philadelphia papers, at least.

A sheet of directions has been prepared to answer inquiries. The two leading Michigan supply dealers have both placed honey solution on the market with the result that a great many motorists are trying it out.

The writer feels that, although the majority of reports of the solution are favorable, there is yet considerable to be learned about its use. Carelessness in adding water to replace the water of evaporation may cause serious trouble if the level of the solution falls below the upper radiator hose connections. At 15° below zero the circulation in radiators having no water pump may, in some cases, be so slow as to cause steaming, unless a "chest protector" is used for the radiator.

However, we have found that the addition of a quart of alcohol to three gallons of solution improves this feature greatly. Also, the addition of about an ounce of ginger to three gallons of solution assists in the prevention of seepage at connections.

We feel that still further improvements can be made on honey solution for an anti-freeze and are experimenting along these lines.

A period of very mild weather has followed the recent extremely low temperature. It is probable that in many parts of southern Michigan bees were able to fly on February 1st. The clover has been fairly well covered with snow up to this time; but, if sudden freezes follow the recent warm weather, it is likely that the clover will suffer.

A beekeeping exhibit will be displayed as a part of the special attractions for the annual Michigan Farmers' Week program. Each year from four to six thousand Michigan farmers with their families visit the Michigan Agricultural College for this association, and our Extension Specialist, Edwin Ewell, is kept busy answering farmers' questions regarding bees.

One and two day beekeepers' schools have been scheduled for 13 different counties, and other meetings are in prospect. This is a part of the regular program of holding beekeepers' meetings in the winter to plan the summer work in the county, as well as for discussion and demonstration of beekeeping practice.

During the coming spring this office will make a special effort to obtain cooperation between fruit-growers and the beekeepers, both in the matter of placing bees in orchards for pollenization and also in the way of attempting to prevent the use of arsenicals in sprays during the blooming season.

Two Michigan beekeepers in particular suffered a heavy financial loss from spray poison last spring. In one case the beekeeper was reimbursed, and in the other, suit is pending.

East Lansing, Mich. R. H. Kelty.

* * *

In Idaho.—Southern Idaho and eastern Oregon enjoyed a very mild fall, and not until the new year was almost at hand, did we experience any real winter; but for a few weeks past there has been more or less snow, and, about the first of the year, temperatures were below zero. The shortage of snow may mean a shortage of water for irrigation, but later snows may yet make up the deficiency.

However, I have heard no one complaining, so far as the bees are concerned, and probably the winter loss will be but little above the average. If a larger loss should be experienced, it may not be an unmixed evil, for the beekeeper with many empty hives need spend little for supplies. With the continued low prices for our product, few are contemplating making much increase, and many apiaries can be bought at a reasonable price.

One of our most extensive producers of comb honey has shipped a car of bees to California, while several apiaries were moved last fall to our mountains, for the early spring bloom.

As we have had several rather poor seasons, we all hope that 1924 will be much better, but whether the alfalfa weevil will prevent this remains to be seen. At any rate, the presence of the weevil makes unnecessary much of the manipulation heretofore practiced.

Some are establishing one or more apiaries in more or less distant regions where there are other sources of nectar supply, or where the weevil is unknown; while others are trying to adapt their management to the weevil and seasonal handicaps in an endeavor to secure profitable crops.

A very general interest is felt in the new methods of sterilizing foul combs, and a report from many who have tried the use of B-H in unboiled foul-brood honey used for feeding bees will be of real value, as, if the plan is uniformly successful, another advance will have been made, for we cannot afford to de-

stroy diseased honey. While boiling such honey renders it safe, boiled honey is doubtless not the best of bee-feed.

On Jan. 12, at Caldwell, there was a meeting of representative Idaho beekeepers to confer with representatives of the Oregon Association and Yakima (Wash.) beekeepers, in regard to better methods of co-ordinating the marketing efforts of the beekeepers of the intermountain region. The Oregon and Washington men were represented by J. Skovbo, the head of the Oregon Association, and C. J. Hurd, Specialist in Organization and Markets of the Oregon Agricultural College. The good work was helped along by S. B. Fralick, who is connected with the organization on the western slope of Colorado. While there was a general agreement that something of the kind must come, no definite plans were adopted. E. F. Atwater.

Meridian, Ida.

* * *

In Texas.—The weather for December and January, while not very agreeable for farm work, has been beneficial to the bees and nectar-bearing plants. December was cool and rainy, there being only two sunshiny days in the month. January was cold for Texas. In fact, the temperature during the two months was so near the quiescent point that the bees consumed but little honey. Colonies examined the last of January show that brood-rearing has commenced, and all indications are for a normal brood-rearing period. At a meeting of the Texas Honey Producers' Association beekeepers from many portions of the state reported unanimously that their bees were in good shape, and that the honey plants were in a normal condition. An examination of a thirty-four-year weather record reveals the fact that a heavy honey production always follows a wet December and during December, 1923, over seven inches of water fell in Texas.

Among the minor enemies of bees in the Southwest the robber fly (*Asilidae*) is one of the foremost. There are four or five species of this fly that take delight in catching the honeybee. Many of the cases of virgin queens' being lost on their mating flights are due to this fly. Robber flies are very numerous during the midsummer months of years that are relatively dry. These insects hide themselves in the bushes near the bee-hives and from these retreats dash forth to capture the bees. Experience shows that these flies have a very narrow range. If they are killed off in the vicinity of the apiary, it will be several weeks before other flies occupy the territory. Until more is known of the breeding habits of robber flies so that they can be combated in the larval stage, the best method of control is to keep the apiary free from bushes and grass, and if the flies become very numerous catch them with a net. It is doubtful whether the robber fly is sufficiently harmful to be opposed in any apiary save where queen-breeding is carried on. In the Southwest the robber fly is also known as the bee hawk, bee-killer and dragon fly.

The amount of moisture which has fallen this winter is sufficient to carry all of the spring plants through their blooming season. The cold weather has held back the blooming to such an extent that when the warm days come there will be a continued honey flow. Agarita is just commencing to bloom. This will give the bees in many sections the impulse to produce large amounts of brood. Horsemint is in fine condition. The men in the huajilla district report that honey plants are in the best condition since 1893.

During the past two years conditions were such as to show why a plant may be of great value one year and of little value the next. December, 1922, and January, 1923, were warm and sunshiny months. Mistletoe bloomed throughout that period, and the bees in many sections stored as much as 10 pounds of nectar from this plant. December, 1923, and January, 1924, were cold and cloudy, and while mistletoe was in the finest of bloom the bees stored practically nothing from it.

The various railroad systems operating in Texas are giving the best of co-operation to the State Foul Brood Inspection Service. These railroads will not accept for shipment any colonies of bees or used equipment without inspection certificates. Beekeepers wishing to ship bees should make note of this fact and obtain inspection before attempting to ship. Dr. M. C. Tanquary, College Station, is the chief inspector and will arrange for inspection. H. B. Parks.

San Antonio, Texas.

In Alabama. January of this year has been the coldest that we have had for the past 25 years. On January 6 the temperature dropped to eight above. This killed part of the young clover that had been brought up by the warm weather preceding, but it is hoped that there will still be enough left for a crop in 1925. This cold weather has helped to conserve stores that are short everywhere in this section.

For the past five years the winters have been very mild and the spring and summer very unfavorable. We are hoping that after this severe weather we shall have an open spring and a good honey crop.

So far as I can learn, the crop of clover that will bloom this year has not been killed.

Shippers of package bees report that orders are coming in better than for several years. This shows that the general outlook for beekeeping is good, for otherwise the northern beekeepers would not be increasing their colonies.

Montgomery, Ala. J. M. Cutts.

In Florida.—The new year opens with bright prospects for the Florida beekeepers. The past season's crop is now practically all out of first hands. In most instances the beekeeper received a much better price than honey has brought for the past three years. The local demand for honey has materially increased, and northern honey is being shipped in to supply the trade.

In the pennyroyal districts this plant began blooming before Christmas. The bees in these localities are busily rearing brood and are rapidly building up to full strength. Some beekeepers report an expected surplus from this source.

The prospects for the coming season on the Florida Keys are not so good as on the mainland. The usual fall rains failed to materialize and there has not been enough rain since last August to wet the surface of the soil. The usual rainfall for September and October is from 18 to 30 inches, while the past season it has been less than two inches. The plants of the hammocks have shed their leaves from drouth and look more like a late fall forest of the north than the usual tropical jungle.

In this climate there is always some brood at all seasons of the year except during periods of drouth. The honey flow and bee activities all depend upon the rainfall, and for this reason the blossoming dates of various plants may differ from two to six weeks from season to season.

Where the bees had a plentiful supply of stores in the hives, brood is coming on rapidly. During January and to date in February there has been plenty of rainfall, and while this has been somewhat adverse for the tourist crop it gives promise of a good honey crop for the beekeepers. The rains have brought early bloom on many of the spring-blooming plants and trees. The bees are securing plenty of pollen and some nectar, which is stimulating brood-rearing to a stage nearly two months in advance of the conditions for the past four seasons.

Beekeeping along the lower east coast of Florida is rapidly being concentrated in the hands of the commercial beekeepers. Many of the farmer-beekeepers who developed apiaries of a dozen to a hundred or more colonies during the flush times of a few seasons ago have become discouraged by the recent poor seasons and low prices and have either abandoned their bees or are selling out to the commercial beekeepers. A few are turning their bees over to professionals to have them cared for on a share basis.

Many who have gone in for beekeeping on an exclusive basis are still increasing their holdings as extensively as their finances and other conditions will permit. Most of these are younger men with optimistic insight as to the future of beekeeping as a business. They can see the bright future that is bound to come to the beekeeping industry.

Florida is now passing through the same periods in regard to honey production as many of the older developed states have gone through, in the destruction of the native flora to make way for the pioneer development of the country. As yet no economic flora has been developed to supplant the native flora destroyed, but as the agricultural possibilities of the state are developed honey-producing plants are certain to be introduced and Florida may again see those past records repeated of a barrel of honey to the colony. C. E. Bartholomew.

Miami, Florida.

In Arizona.—As reported in January Gleanings, winter conditions as to moisture began very favorably for Arizona in November. More than normal rainfall occurred in both November and December, and this was the case over practically the entire state. Beekeepers were agreed that prospects were unusually favorable for a good crop of blossoms in early spring for the upbuilding of colonies, which begins in southern Arizona at a very early date. A complete reversal of form as regards weather has occurred for January, however. Scarcely a trace of rain has fallen during the month, and, while the prospects for a mesquite-catsclaw honey flow are probably not yet affected, the winter annuals, which would furnish the early spring supply of nectar, are in grave danger of drying up for lack of moisture. One can not now predict what will be the outcome.

While mean temperatures have been somewhat below normal, there have not yet been any minimum temperatures as low as are usually experienced in southern Arizona. Consumption of stores has not been great to date, but will increase from now on. Pollen from mesquite mis-

tletoe is being brought in now (February 4), and, in the warmer localities, cottonwood is also yielding a pollen supply or will do so in a few days.

Some Arizona honey is still to be had in the local markets.

Tucson, Ariz. Chas. T. Vorhies.

In Louisiana.—Louisiana experienced the coldest weather during the early part of January that it has had for the past 25 years. Up to January 5 everything was springlike down here. The shrubs and vines were covered with flowers and the bees were carrying in several kinds of pollen, but the arctic blast reached us on the afternoon of that day, and before sunrise the following morning the mercury had tumbled to nineteen degrees in New Orleans, and in some parts of our state to 9 degrees above. At the present time most of the delicate plants, as well as the palms, look like dry fodder. Even the camphor trees and live oaks were "singed" by the cold, and the outside leaves look as though they had been exposed to intense heat.

Back in the deep forests where protection was given, the water maples came into full bloom regardless of the cold and are at present everywhere showing their beautiful red and pink blossoms. At the same time, the bees are not losing any opportunity to bring in the nectar and pollen to help build up themselves to strong colonies. The colonies of bees were strong and fast reaching perfection at the time of the freeze, and I expected to find much dead brood following this freeze, as the brood-nest had been greatly enlarged before that period. To my surprise, however, I have found no dead brood here at Baton Rouge, and the bees at this time are in the very best condition.

The freeze has set back the early-bearing blossoms and will bring them into bloom after the chilly spring weather has passed, and no doubt this year will be a great honey year. At the present time, possibly 98 per cent of all the honey is out of the producers' hands and was sold at a very fine price. I don't think that five per cent of the crop was sold outside the state. Most of it was sold to dealers and manufacturers in New Orleans.

During the holidays I had the pleasure of a visit from "Judge" J. M. Barr of West Allis, Wis. You beekeepers who know him personally know that the short time he remained here was happily spent and was a continuous run of fun and laughter. We visited a few beekeepers near New Orleans, and he was greatly amazed at the full colonies of bees working with the spirit of bees on a June day in Wisconsin. The bees were at that time working on the peach trees, then in full bloom. We visited the parks and watched the alligators in large numbers lying around in the sunshine. Mr. Barr "took the fever," and about 3 o'clock in the afternoon stretched himself out on the grass and white clover under the shade of a tree, and, after wiping the perspiration from his brow, took a thirty-minute nap. Mr. Barr thinks that he may later come to Louisiana and embark in the package-bee business. We hope so. The outlook for beekeepers, both in the honey and pound-package business, is the very best, and they are expecting a big increase over last year. E. C. Davis.

Baton Rouge, La.

In Georgia.—Bees in this section seem to be wintering as well as usual, our unusually cold spells having been of short duration, and the early blossoms have appeared only a little later than usual. The bees were seen bringing in pollen early in the month of January, but only occasionally all through that month. The prospects for a good honey season are as good as we could reasonably expect, since we have had abundant—sometimes superabundant—rains and just enough cold to keep back premature blooming of the best early honey plants.

Some shippers of package bees in this state are getting orders at such a rate as presages a busy time for them the coming season. A. R. Irish has bought out Curd Walker's bee interests in Alabama and hired Mr. Walker's son to raise queens for him the coming season, the elder gentleman retiring to his bee interests in Tennessee. Mr. Irish reports orders enough to make it lively for the express company that has to handle them (especially if the packages come open on the way).

I believe that bees, by cross-pollinating honey plants, cause them to produce seed of greater germinating power and vigor to produce stronger plants and more nectar, besides spreading more rapidly overland. They may even produce a new hybrid or new species, so I am not surprised to hear of new honey plants appearing and becoming sources of nectar in different parts of the South where bees have been kept in quantities sufficient to occupy the territory to somewhere near the limit of its capacity for nectar production. The "Wonder Honey Plant," described in a recent issue of the "Dixie Beekeeper," is already producing large yields of honey near Branford, Fla., and now the January number contains illustrations of another plant that is rapidly spreading in south-

east Georgia and has already yielded some surplus honey in some of Mr. Wilder's apiaries. There is much territory in the South that might be growing honey plants if just the right kind were introduced there and thus make good use of much waste land. The so-called Mexican clover is already doing beekeepers lots of good in cultivated districts, but we can welcome as many more as can be found. I wish some enterprising observer would discover a legume that would be of universal utility for honey and other useful purposes.

Norman Park, Ga. T. W. Livingston.

In Ontario.—Since January 1 the weather here in Ontario has been quite cold, with but a few days that one could call mild. Naturally the weather prophets that were foretelling a winter of unusual mildness, similar to what we had in December, are now keeping a discreet silence. While the weather has been rather cold, yet it has not been abnormal at all, and, so far as the outdoor-wintered bees are concerned, nothing has occurred to cause any anxiety up to date, February 9.

Answering friend Crane's comment on retail prices of honey in New York State as compared with prices here in Ontario, I wish to say that I referred to extracted honey. While I noticed a lot of comb honey in the markets of Buffalo, I never asked what the retail prices were on that commodity. As to extracted honey, if memory serves me right, I think I said that prices ranged at least 50 per cent higher than here in Ontario—not double our prices. To give a concrete illustration, I might say that some stores were retailing five-pound pails at $1.50 while the general run was, I believe, $1.25 per pail. Here in our stores in Toronto at the same date, 75 cents per pail was the general range. Our pails are sold gross weight, yet, allowing for that, prices compare favorably with that I stated—in fact, my estimate was too low. As to wholesale prices, I also know what the general range was in Ontario, and prominent producers in New York showed me offers received for clover honey. I again think that my estimate as to comparative wholesale prices are not out of the way at all. Personally, I think our price of 75 cents per pail is too low, and on the other hand, I think that double that price is far too high. This is not making any comments as to what our friends "over the line" are charging, as that is none of my business. But I am merely expressing sentiments that I would entertain if retail prices were being discussed for home use.

I have received several communications relative to what I said, in a recent issue of Gleanings, as to Ontario's being a large consumer of honey. Possibly there are countries using more honey per capita, and I would not argue the question as I have no positive data either to prove or disprove statements concerning this matter. But one thing we will all agree upon is that, with a consumption of over 100 pounds of sugar per capita for United States and Canada, the amount of honey used by any of the other countries is ridiculously low. Just how we shall make the ratio of sugar and honey more equal is the problem of all problems confronting honey producers at present. Something must be done, and that something has not been clearly demonstrated by any person to date.

From an inquiry at the office of the Ontario Producers Co-operative, I learn that the movement of honey is steady but not above normal. Conditions in the western provinces are not any too good, and the general depression in business is naturally reflected in honey sales. When people are hard up for cash they do not stop to argue much about food values, I have noticed, but are apt to buy those articles that are the easiest on the purse. Then again, unfortunately, no matter what we may think about honey as to its food value, too many people are yet inclined to look upon it as a luxury, and, when money is scarce, they leave honey alone and buy cheap syrups.

Some time ago circulars were sent out by the executive of the Ontario Beekeepers' Association offering to bring in bees on combs for members at cost in late April or early May. In view of the fact that production in Ontario is at present away ahead of consumption, vigorous opposition was shown to the proposed move by many Ontario beekeepers. The latest information to hand is that the bees will not be brought in, and in a semi-official way it has been hinted to me that bees on combs may be barred entirely from Ontario for some time starting in the near future. With increased grants for inspection work being solicited from the Minister of Agriculture, I understand that he has thought it unwise to allow bees to come into the province on combs, at least until more headway is made in fighting foul brood in the province. While we have a fair country for beekeeping, unfortunately we have our full share of American foul brood, so possibly the move to bar bees on combs, for a while at least, may be a wise one. Certainly under present conditions the Association would be ill advised to have any official part in the bringing of bees in a wholesale way into the province. J. L. Byer.

Markham, Ont.

HEADS OF GRAIN FROM DIFFERENT FIELDS

Use of the Food Chamber. I have learned from trying it out in my apiary, that the food chamber can be used more effectively and with better returns by also using the quadruple packing case. I have found one is equally as important as the other. By using them I can have more early brood and consequently more bees when the early honey flow comes. I get more honey by keeping a large number of bees in one colony than dividing and having more colonies with fewer bees per colony. I have been keeping bees the past 48 years, but have only the last four years used the food chamber and the quadruple packing case. Prior to this, my largest average per colony was 160 pounds, but since I have used them my largest average per colony has been 209 pounds, and I have not lost a colony. The importance of their use has been proved to me conclusively.

Milton, Ind. Geo. W. Baker.

Protecting Bees in Sweden. On page 94 of February Gleanings, J. E. Crane states that the hives shown in the picture from Sweden are covered with overcoats made of straw. I wish to make the following correction:

Those "overcoats" are made of bark from fir trees. A large piece of bark is cut to the right shape and size to roll up into a cone, and then stitched together along the one seam from top to bottom. These covers are very tall as shown in the picture, come to a sharp point at the top, and within a very few inches of the bottom-board, so that they are a perfect protection against rain, snow, wind and sun. The hives themselves are the ordinary round straw skeps.

Many years ago I helped my father keep bees in such hives. The principal work was to hive swarms, and then gather the honey by killing the bees. We knew nothing then of modern hives and beekeeping. E. H. Lenning.

West Lafayette, Ind.

Taking Bees Out Early. I advocate the rule of removing bees from the cellar the first warm day, on or after March 20 in this locality, because after that date there is little danger of heavy frosts continuing for days at a time. From personal experience I have observed that bees that can avail themselves of an early flight can endure much cold weather thereafter and are generally stronger and in a better condition than cellar-wintered bees that have been kept in until a later date. This probably explains why outdoor-wintered bees are usually stronger in spring than cellar-wintered bees.

The prime essentials are that colonies be strong in young bees, headed by a prolific queen and have ample provision of good stores when put into the cellar. Colonies in this condition are practically immune against loss from exposure to cold weather in spring after they have had one good cleansing flight. Furthermore, I feel safe in stating that, barring disease, the majority, if not all of the losses occurring during the spring period are due to the failure of providing one of the above-named requisites.

Other things being equal, bees have nothing to gain by being detained in the cellar until a late date unless they are short of stores. Henry Hograve.

Waukesha, Wis.

Bees Fly During Snowstorm. Last spring we had a week of very nice weather so that the bees in the cellar became restless, and I decided to put them out. I got all hands ready and on the last evening of March about 6 o'clock we began and by 9:30 had them all out. We found one that had dysentery and two queenless nuclei dead; the others were fine colonies, the hives being full of bees.

That night it turned cold and all the next day the mercury stood at 32°, but the bees flew, anyway. The night of April 1 it snowed, and continued until noon of the 2nd of April when it was about four inches deep, but the bees continued to fly. They would start out, get 25 or 35 feet away, and then take a nose dive for the snow. They would sink down three-fourths of an inch, turn over and lie still. On April 3 I counted 59 fair colonies left out of 111 good ones.

Helena, Mont. Hiram Miller.

[This illustrates the importance of selecting the time for putting the bees out, just before a good flight day if possible. This can usually be done by watching the daily weather map published by the U. S. Department of Agriculture. Bees that have wintered perfectly will not fly when it is too cold on being set out of the cellar; but, if they have become restless in the cellar, there will be considerable loss unless set out the evening before a good flight day or early in the morning so they can fly the same day.—Editor.]

Changing Conditions in the South. Now that the farmers have changed their system of farming, prospects for honey production are growing brighter and the number of apiaries will, no doubt, continue to increase. The reason is, a large acreage is being planted in clover, velvet beans, cow peas, buckwheat and other crops. Farmers who have heretofore kept bees in "gums" are waking up to the importance of good hives, and many are discarding the "muzzle-loaders."

The local demand for honey has been good. We could not begin to supply Atlanta and the adjacent small towns. Roadside beekeepers are persistently pestered with would-be buyers. So far as I can ascertain, the spray poison hasn't hindered honey production in this section.

Lithonia, Ga. Chas. H. Huey.

Beekeepers Help Inspectors. The good results in the eradication of the brood diseases in Indiana have been brought about largely through the co-operation of a few good-hearted beekeepers in nearly every county who are always ready to give their time and the use of their cars to help the bee inspectors in their work among the beekeepers. They are also willing to help neighboring beekeepers when the inspector is not there. That is what counts in getting rid of disease and makes good beekeepers. Always be ready to give your neighbor beekeeper a little good advice, and, if he happens to have a little disease, help him clean it up so he won't make a mess of it and spread it broadcast. It is cheaper to help him for nothing than to treat it in your own yard after you get it. T. C. Johnson.

Logansport, Ind.

Feeding During Cold Weather. There are several methods of feeding bees in cold weather that reduce the risk considerably. If the colonies are stored in the cellar, where the temperature is above the freezing point, the cover may be removed, a hole cut through the cushion and the feeder placed so as to close up the opening. Another excellent method is to supply food from below rather than from above. This method has numerous advantages over the former, and should be used instead. Colonies being wintered in chaff hives are much more difficult to feed than those stored in cellars. Opening chaff hives during cold weather is out of the question. Any food supplied the bees in chaff hives must be gotten into the hive without exposing the cluster to the chilling atmosphere. They should be fed only on warm days, and then it is a great risk. If several colonies are to be fed, they should be removed to a cellar or shop where it is warm so they can be properly cared for. What to feed bees in cold weather is another serious problem to solve. Experienced beekeepers are firm in the opinion that giving frames of sealed honey is the best way to feed during cold weather. If sealed honey can not be obtained, granulated sugar made into a thick syrup is the cheapest and best food that can be had.

North Williston, Vt. Oskar Staysel.

The Cost of Production. Mr. Byer doesn't know what to say about the figures on the cost of producing honey. (See page 808, December Gleanings.) Well, he is not alone in that boat. The way these experts figure it out looks very reasonable, but I wonder how it comes that I am not in the poor house by this time. Like Mr. Byer, I have been producing honey at a loss, according to those figures in the bee journals. I have raised a family, built up an apiary of 700 to 800 colonies from 2 to start with in 1891 and have purchased bees, supplies, machinery, cars, truck and buildings for the bee business. I am sure these have cost me between $8,000 and $10,000. The bees have paid for it all and I don't owe anybody. Perhaps I haven't received anything for my own work but my living, but who gets any more? Figure as you will, the problem is a perplexing one. I hope Mr. Byer will explain the peculiar situation some of us are in.

Brush, Colo. Daniel Danielsen.

Importance of Co-operation. Two points stand out clearly in my mind—first, our bee journals and schools of bee culture have given their efforts largely to teaching the furtherance of the production of honey. We have come to a time when we produce the largest quantity since beekeeping became commercialized. This is a great achievement. Second, with this great production and prospects of greater, we have done comparatively little in the way of creating an outlet that is dependable, year in and year out, for this production. Until this is brought about we can not say that the honey business is on a sound basis.

Can't we as beekeepers, who are just as an intelligent body of people as the dairymen, raisin growers, orange producers and apple men, get together, as they have done and co-operate to the betterment of all concerned?

Syracuse, N. Y. Frank M. White.

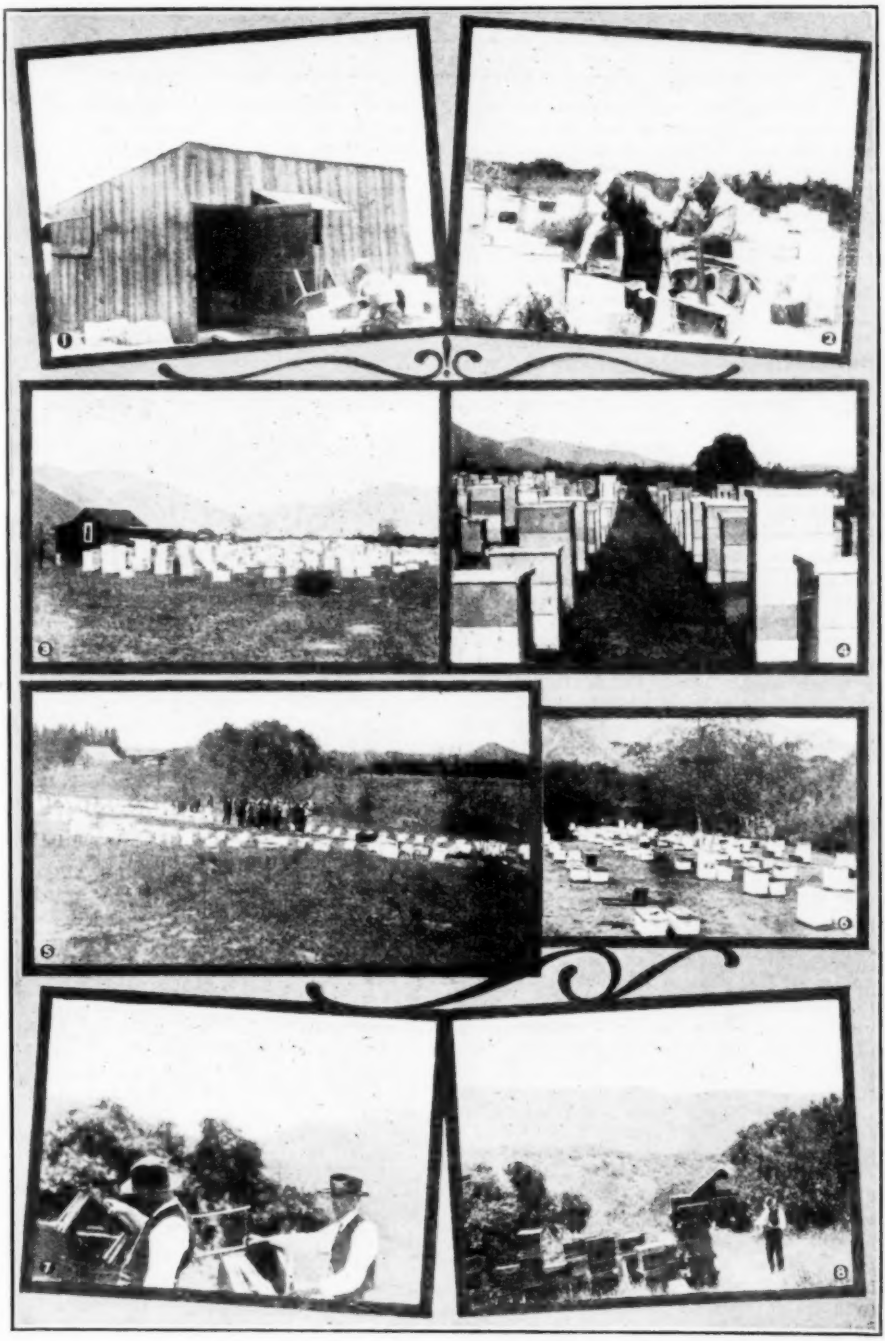


Fig. 1.—G. B. Larinan's extracting house, California. Mr. Larinan operates over 1000 colonies. Fig. 2.—Larinan's men removing the combs preparatory to extracting. Fig. 3.—Characteristic California apiary with mou: tains in the rear. Fig. 4.—Closer view of some of the skyscrapers shown in Fig. 3. Fig. 5.—Field-day meet in California. Fig. 6.—California apiary devoted to the raisi: g of package bees. Fig. 7.—Charles F. N. Stone and Frank McNay inspecting combs of an abandoned apiary, Sycamore Canyon, near Los Angeles. Fig. 8.—Same apiary referred to in Fig. 7. Foul brood and starvation had evidently cleaned it out.

TALKS TO BEGINNERS

Geo. S. Demuth

In the South the active season for the bees begins this month, but in the North they are usually not able to do much until about the first of April or later. The beginner in the South who has not already acquired his colonies of bees should now do so without delay. In the North there would not be much gained by acquiring the bees until April or May; but, if the opportunity to purchase bees presents itself before that time, the beginner may as well make sure of obtaining his colonies by acquiring them now, provided full colonies are purchased from a neighboring beekeeper. If bees are purchased in packages from the South they should not be delivered until some time in April or the first of May in the northern tier of states. However, those who expect to obtain their first colonies in this way should order their bees immediately in order to have them shipped promptly at the time needed. Package bees that are received late in the season do not have time to build up to sufficient strength to store much honey except in localities where the honey is stored later in the season. About the first of May in the northern tier of states and in Canada is usually the best time to have package bees delivered.

Where to Locate the Bees.

On the farm usually the best place to locate the bees is in a corner of the orchard, in the back yard, or in a nook in the garden, always remembering that they should not be located where teams will be driven back and forth near the hives. If on a village or city lot there is usually an out-of-the-way nook where the bees can be located so that they will not bother the neighbors or members of the household. If no space in the back yard is available, the bees can be placed in the attic by arranging an entrance through the siding of the house or through the window with the sash slightly raised. In some cases a dozen or more colonies have been kept on the roof of a building in the city.

Wherever the bees are located their hives should be protected from cold winds by a fence or building on the side of the prevailing winds. As a rule, it is best to have the hives standing where the sun will shine upon them during the greater portion of the day instead of being located in the shade. It is better to shade the hives with a wide board during the hottest weather than to have them in the shade during winter and early spring. The hive can be placed with the entrance in any direction that fits the surroundings best, but most beekeepers prefer to have the hive facing either east or south.

If full colonies are purchased from a neighboring beekeeper, the hive entrance should be closed with a piece of wire cloth so no bees can get out while being moved, and the hive parts should be fastened together by means of lath nailed on the sides for moving. This moving can be done on a cool day when the bees are not flying, or in the evening after all bees have returned. As soon as the hive is moved to its new location the screen should be removed from the entrance, for if left on even during the night the bees will be restless because of their confinement and might be suffocated.

Number of Colonies for the Beginner

Whether the beginner should start out with one colony or a dozen colonies depends upon circumstances. Much valuable experience can be acquired by taking care of a single colony and in a favorable season one colony should furnish enough honey for an ordinary family for the year. But there are several advantages in having at least two or three colonies, and the ambitious beginner who can devote a little time evenings to his bees need not hesitate to start with a dozen or more colonies.

The Modern Beehive and its Parts.

Beginners are often confused on learning that beehives are made in different sizes and in different styles, and that a different equipment is used when the honey is to be taken out of the combs as liquid honey than when the honey goes to the consumer in the combs.

However, a little study of the modern beehive reveals the fact that it is a very simple apparatus. The essential feature is that the combs are built within frames, which are suspended in the hive in such a manner that there is a space entirely around the frames so that the bees do not fasten them to the hive. The space provided between the frames and the walls, ceiling and floor of the hive is about $\frac{5}{16}$ of an inch. If it is much less than this the bees will glue the frame to the hive, and if it is more than $\frac{3}{8}$ of an inch they will build bits of comb in the space.

Since combs are frequently taken from one hive and put into another, all hives and frames should have the same length and height, thus making them interchangeable. It is the inside dimension of the hive and the outside dimension of the frame that should be uniform in or

der to preserve the proper space around the frame. Such a hive permits the lifting-out of each of the combs so that a thorough examination of the colony can be made and combs can be added or taken away at will, without cutting or injuring any of them.

The modern beehive dissected to show its parts.

In the accompanying illustration a hive arranged for producing comb honey in one-pound section boxes is dissected to show the parts which make it up. The hive-stand at the bottom is simply a foundation for the hive to keep it off the ground, thus preventing decay of the floor. The floor is so constructed that the space below the combs is provided in the floor, thus forming an entrance which except during warm weather is partially closed by the entrance-reducing cleat. The brood-chamber which rests directly on the floor contains 10 standard frames, each 17⅝ inches by 9⅛ inches. This is the part of the hive in which brood is reared, hence its name. It is only during a short time that this chamber is nearly filled with brood. At other times it may contain considerable honey and pollen.

In order to obtain perfect combs that are built wholly within the frames and having all cells the right size for rearing worker bees instead of drones, each of the frames in the brood-chamber is provided with a sheet of beeswax which has been embossed in imitation of the natural septum in the comb by running it between rollers made to emboss the wax with the right pattern. These sheets of embossed wax are known as foundation. The frames rest in rabbets cut into the ends of the hive so that they are suspended from the projecting top-bar. There is a space of about $\frac{5}{16}$ of an inch above the top-bars of the frame so that when the inner cover or a super is placed on the brood-chamber there is the proper space between to prevent the cover or super from being waxed fast to the frames.

Next above the hive body or brood-chamber in the illustration is the comb-honey super, which is put on the hive only when bees are gathering enough nectar so that they will store more than they need for immediate use. The super is the part of the hive which contains the surplus honey. That which is stored in the super belongs to the beekeeper, and that which is stored in the brood-chamber belongs to the bees. Ordinarily the supers are not put on the hives until the bees are able to gather an abundance of nectar and they are taken off when filled. While in the illustration a super for comb honey is shown, if the honey is to be taken out of the comb (extracted) a super of different type is used. In fact, most who practice taking the honey out of the comb and returning the combs to the bees to be refilled, use a super exactly like the brood-chamber, for it is more convenient to extract the honey from the large frames than from the small boxes used in comb-honey supers. Some use a shallower chamber but otherwise the same, which is known as the shallow extracting super.

The inner cover shown above the super is a light cover made of ¾-inch lumber, but having a rim of thicker material, thus forming a space at the top. The brood-chamber, supers and inner cover, therefore, have spaces at the top so that no matter how they may be tiered up there is always a space between them.

The outer cover telescopes down over the inner cover and the hive body or super, as the case may be, to prevent rain from beating in at the joints. Some hives are built with a single cover instead of the double cover shown in the illustration, in which case the flat under side of the cover rests directly upon the brood-chamber or super.

This is the modern beehive in its simplest form, but it is not suitable for wintering bees in the North unless it is put inside of a large box and packing material poured between or the hive is carried into the cellar for winter. A much better hive for the beginner is one with

(Continued on page 185.)

GLEANED BY ASKING

Geo. S. Demuth

Hives Made of Yellow Pine.

Question.—Will bees stay in hives made of yellow pine or walnut?

Illinois. Albert Watermeier.

Answer.—Newly-hived swarms often swarm out within a day or so after being hived if conditions are not altogether favorable, no matter what kind of wood the hive is made of. So far as the bees are concerned, the kind of wood used in the hive makes but little if any difference. The greatest objection to yellow pine for beehives is that the wood is heavy and splits badly when nailing.

Moisture Within Hives in Cellar.

Question.—I find that some of the combs in the hives in the cellar are covered with moisture and mildew, although the cellar is dry. Will this kill the bees?

Wyoming. E. A. Driskill.

Answer.—Moisture condensed on the combs will not kill the bees. Probably the greatest harm this moisture does is in being absorbed by the honey, sometimes causing it to become thin and sour. However, moisture within the hive in the cellar is an indication that something is wrong. The cellar temperature is too low; the bees are more active than they should be for good wintering because of poor stores or the presence of too many old worn-out bees; or the air within the cellar is so highly saturated with moisture that the vapor given off by the bees does not readily pass out of the hive. If this condensation is a result of the temperature's being too low it can be corrected by raising the cellar temperature. If brought about by the air within the cellar being saturated with moisture the ventilation of the cellar will help, but if brought about by poor stores there is no remedy except a cleansing flight.

Causes of the Brood Diseases.

Question.—Does any one know that the modern brood diseases of bees are not the result of erroneous manipulation, thereby inducing habits that invite diseases? John M. Gibbs.

Virginia.

Answer.—The causes of the brood diseases have been definitely worked out. There is no relation whatever between erroneous manipulation and American foul brood. This disease is caused by a microscopic organism and if there is no disease in the vicinity, or it is not carried in by the beekeeper in contaminated honey or apparatus there can be no American foul brood. No American foul brood has ever been found on the Island of Porto Rico, and there is plenty of erroneous manipulations there. The same thing is true of many sections of the United States where the disease has never been introduced. In the case of European foul brood there is a definite relationship between the disease and management, for very strong colonies are usually able to throw off this disease. But European foul brood is also caused by a micro-organism, and no amount of erroneous manipulation can produce it in localities where it is not already present.

The Standard Eight-frame Brood-chamber.

Question.—Is the standard eight-frame brood-chamber large enough for a strong colony of bees? Roy E. Powell.

Missouri.

Answer.—The amount of room needed by a strong colony of bees varies greatly throughout the year. During the winter the standard eight-frame hive is plenty large enough for a strong colony. In fact, even the strongest colonies unless abundantly protected are in better position to withstand the winter in a small brood-chamber than in a large one. There are also times even during the summer when a strong colony would not be injured by being confined to a single-story eight-frame hive. On the other hand, in the height of a good honey flow a strong colony may not have enough room even in seven or eight stories of the eight-frame hive. The beekeeper, therefore, makes the hive elastic by adding units when more room is needed and taking them away when less is needed. A single eight-frame brood-chamber is not large enough to hold all the brood a prolific queen can produce and sufficient honey and pollen during the heavy spring-breeding period. However, it should be remembered that intelligent management is far more important in honey production than the size or shape of the unit used in making up the hive. Some of the largest yields of honey on record have been produced in eight-frame hives. Under conditions prevailing in some parts of the South and in comb-honey production even in the North, the much abused eight-frame hive is making good in the hands of careful beekeepers. While it would not be advisable in starting new to purchase eight-frame equipment, it would be folly to throw away such equipment if in good condition, simply because some do not succeed with them.

Honey Fermented in Combs.

Question.—Can the bees make any use of honey which has fermented in the combs if these combs are given to them in the spring?

Indiana. John Longaker.

Answer.—These combs should be kept in a warm, dry place during the winter and given to the bees in April or May. Slight fermentation of honey in the

combs apparently is not harmful to the bees, and this honey will be of great value in promoting brood-rearing in the spring.

Cause of Loss in Cellar-wintering.

Question.—Last winter I lost 20 out of 50 colonies wintered in the cellar. Can you tell me why so many of them die?

Wisconsin. Miss Clara Simplot.

Answer.—The usual causes for poor wintering in the cellar, aside from the colonies being in poor condition in the fall as to strength and number of young bees, are, first, a poor quality of winter stores and, second, cellar temperature either too low or too high—usually too low. Either of these defects will bring on poor wintering, and if both are present cellar-wintering usually results disastrously. Cellar-wintering should never be attempted if the stores are not of the best quality or if the temperature of the cellar can not be kept uniformly somewhere between 45 and 50 degrees Fahrenheit.

Cost of Comb-Building.

Question.—I wish to determine as accurately as possible what it costs to have the bees draw out standard combs from full sheets of foundation, when using honey they gather from the fields. C. J. Appeldoorn.

Ohio.

Answer.—The cost of building combs from foundation will vary greatly according to the condition of the colony, the character of the honey flow and the advancement of the season. Under favorable conditions a colony should store at least three-fourths as much honey when foundation is given as when empty combs are given, as has been proved over and over in comparing the yield of comb honey with that of extracted honey in the same apiary and under the same conditions. Assuming that this is the proper ratio, a colony should draw out the foundation and store 45 pounds in ten frames in a standard extracting super, while a colony of equal strength under the same conditions would store 60 pounds when given empty combs, thus making a difference of 15 pounds, which would represent the cost of building the ten combs. However, if during a good honey flow supers are given containing only three or four frames of foundation together with empty combs, the crop would not be materially reduced during a good honey flow, in which case the cost of building the combs is almost nothing. This is probably because the bees secrete some wax during a good honey flow whether comb-building is necessary or not. On the other hand, under unfavorable conditions colonies may be so reluctant to build combs that most of the potential honey crop is lost because of a lack of combs. This would be especially true when the honey flow is slow. In general, we may assume that it costs from one to two pounds of honey per comb to have the combs built out. At 10 cents per pound, this would mean that it costs from 10 to 20 cents per comb.

Building Up Two-pound Packages.

Question.—How long does it take a two-pound package of bees, together with a queen, to develop into a strong colony? Will a four-pound package develop twice as fast as a two-pound package? Roy E. Powell.

Missouri.

Answer.—A two-pound package of bees, together with a good queen, should build up to good strength for the honey flow within about eight weeks, provided they have an ample supply of honey and pollen at all times. A four-pound package will not develop twice as fast as a two-pound package, although at first it will develop much faster. The colony can not develop any faster than the capacity of the queen for egg-laying, and there are apparently rather definite limits as to the most profitable size of package. Experience of those who have purchased many packages of bees would indicate that the three-pound package is large enough for the capacity of the ordinary queen, provided there are about eight weeks for building up for the honey flow. Many have found the two-pound package to be more profitable than the three-pound package.

A Good Use for Dark Honey.

Question.—I have six or eight supers of very dark honey (probably honeydew honey). I have no extractor, and it seems too bad to waste all the comb to remove the honey. What can I do with the honey?

Kentucky. Hattie Caldwell.

Answer.—Put one of these supers of dark honey on each of your colonies in the spring so that the bees can use it for brood-rearing. By giving them an abundance of honey in this way they should build up to greater strength than when this is not done. By doing this, you can have the dark honey converted into bees, which should increase your crop of light honey next summer.

Moisture at Entrance of Hive.

Question.—My bees are well packed in winter cases; but the entrances of some show signs of moisture, although they have slight upward ventilation through the hole in the inner cover, and the entrance is about 2½ inches wide in each hive. Is this moisture harmful?

Ohio. J. N. Krout.

Answer.—A slight condensation of moisture at the entrances after extreme cold spells, such as we have had this winter, need cause no alarm. During milder winter weather the moisture given off by the bees escapes from the hive in the form of vapor, but during extremely cold weather some of it condenses when it comes in contact with the colder air at the entrance. This will all dry out within a short time.

JUST NEWS
Editors

The Illinois State Beekeepers' Association State Bulletin is now printed in pamphlet form. It is issued monthly at Hamilton, Illinois, and is ably edited by M. G. Dadant, secretary of the association. The little publication starts the new year with the slogan "One Thousand Members in 1924."

* * *

The Cook County Beekeepers' Association, Chicago, Illinois, took advantage of the presence of speakers of note in Chicago during the American Honey Producers' League meeting to hold an evening meeting on January 25. The membership of the Cook County Association is made up largely of beekeepers within the city of Chicago. The meetings are held at frequent intervals always with large attendance.

* * *

Prof. G. M. Bentley, secretary-treasurer of the Tennessee Beekeepers' Association, reports the convention held in Nashville on February 1 as the largest attended and best meeting this association has ever held. The discussions were entered into with great interest, and the entire session was a success. The attendance was considerably over 100. Grace Allen, Nashville, was elected president, and Prof. Bentley was re-elected secretary-treasurer.

* * *

The first steps in the formation of a permanent beekeepers' association in Arkansas was taken on February 11 when the new organization was completed. George C. Becker of Little Rock was chosen secretary.

* * *

The British Beekeepers' Association, now fifty years old, is celebrating its jubilee year. The history of the association is being published in the British Bee Journal under the title, "British Beekeepers' Association Jubilee: 50 Years of Beekeeping Progress."

* * *

Legislation affecting beekeepers, passed at the last session of the Provincial Legislature of British Columbia and which is now law, provides that beekeepers must notify the provincial apiarist or an inspector for the territory if disease appears in their apiaries, and must state the location of the apiary; that honey produced outside of the province offered for sale in British Columbia must be plainly marked as to its origin and also each separate package must be marked with the net weight; and that any municipality within the province is empowered to prevent the moving of bees on combs into the municipality unless accompanied by a certificate of inspection showing that they are free from disease.

* * *

The fifteenth annual meeting of the Maryland State Beekeepers' Association, held in the Southern Hotel on January 9, was well attended. Addresses were made by J. R. Hamilton, Office of Bee Culture, U. S. Department of Agriculture, Washington, D. C.; Dr. E. F. Phillips, who has charge of the same office; George Harrison, Jr., University of Maryland, and M. W. James, Baldwin, Maryland.

* * *

Reduced railroad fares on certain roads have been secured for the seventh International Apicultural Congress to be held in Quebec, Canada, September 1 to 4, 1924. Full information in regard to these rates can be secured by writing to C. Vaillancourt, Department of Agriculture, Quebec, Canada. Also information concerning entering Canada by automobile will be furnished to those who desire to go to this meeting in their automobiles.

* * *

"Legal Rights of Beekeepers" is the title of a new book now in the hands of the printer. This book was written by Colin P. Campbell, vice president of the American Honey Producers' League. Mr. Campbell is a prominent attorney-at-law of Grand Rapids, Michigan, and therefore, well qualified to compile such a book. It was prepared gratis for the American Honey Producers' League.

* * *

The annual meeting of the Ohio State Beekeepers' Association, which was held at the Ohio State University February 7 and 8, was an unusually successful meeting in many ways. Miss Florence Naile, Columbus, was re-elected secretary-treasurer, and F. B. Moore, also of Columbus, was elected president of the association.

* * *

"American Honey Plants," by Frank C. Pellett, published by the American Bee Journal, Hamilton, Ill., has been revised and about 100 pages added so that it now contains 400 pages.

* * *

The H. Korn Baking Co. of Quincy, Ill., is advertising Betsy Ross bread which is made with pure milk and creamery butter, and is sweetened with honey—surely an appetizing advertisement.

BEES, MEN AND THINGS
(You may find it here)

"Although I am in a locality which some think is best suited to extracted-honey production, there is a fine honey flow from the tulip tree which enables me to produce comb honey. There are but few beekeepers here who handle their bees so they will get surplus honey from this source. Although the honey is a little dark for comb honey it finds a ready sale at good prices."—Raymond Broyles, Greene County, Tenn.

"In this locality sweet clover grows everywhere in great abundance as a natural growth. Alfalfa is raised in abundance as a hay and seed crop. One can walk through the alfalfa when it is in full bloom and scarcely see any bees working on the blossoms, but in the sweet clover there is a continual hum of bees. They seem to prefer sweet clover to all other honey plants in this locality."—E. G. Browning, Valley County, Mont.

"It may be of interest to northern beekeepers to know that in many parts of the coastal section of North Carolina, the bees were rearing brood in January in preparation for spring operations and were gathering nectar and pollen from some early-blooming maples, alders and other plants. Bees in the state college apiary at Raleigh were gathering pollen the latter part of January, although no brood has been found in any of the hives examined here."—J. E. Eckert, Raleigh, N. C.

"For the first time since I have been sending you market reports I am compelled to state that there is not a sufficient movement of honey to warrant filling in the blank. There appears to be very little movement of honey in retail packages and no movement in wholesale lots."—H. F. Wilson, Dane County, Wis.

"On January 31 and February 1, we had a warm spell of weather and I unpacked and repacked my bees, which are wintering in sheds as shown on page 91 of the February issue of Gleanings, to learn conditions and if necessary remedy any defects. To my surprise I found most of the colonies with one to three frames of brood started. One strong colony well supplied with honey in a single eight-frame hive had two frames of brood under way in all stages of development and eight queen-cells with larvae. One of these was already sealed."—I. W. Cameron, Turner County, S. D.

"On February 14 I noticed young bees flying from nearly every colony. This is a condition I do not like. I believe the unseasonable brood-rearing was brought about by the mild weather the latter part of January. I examined one colony about the first of February and found brood in two frames. This colony had plenty of stores."—J. Howard Wagner, Merrick County, Nebr.

"At the annual meeting of the Ohio State Beekeepers' Association several tasks were set for accomplishment in 1924. Plans were made to co-operate with the Extension Department of the University and the Division of Agriculture in organizing all counties at present without an association; to seek the affiliation of all county organizations with the state body; to revise the constitution to conform as nearly as possible to the Wisconsin plan; to standardize honey packages and adapt a uniform label."—F. B. Moore, Columbus, Ohio.

"Although crippled with rheumatism, Will Stickler, Lexington, Illinois, does all his own work among the bees and makes his own hives. One of the features of his hive is that one side is fastened with hooks so that it can be swung out to allow the removal of frames. He uses a thirteen-frame hive, which makes it square and the cover fits any way it is put on. Last year he produced 7000 pounds of comb honey and extracted honey from 80 colonies of bees. He has kept bees for the last 50 years."—Samuel H. Love, Rock Island County, Ill.

"In regard to that rim of honey above the brood so often mentioned, this disappears when the frames contain all worker combs and the hive bodies are tiered up. Brood is then built to the top-bar and the honey carried into the upper story. With perfect combs the heavy top-bars seem to be no handicap to the queen, and the brood-nest takes the same form it would if the two combs were one perfect whole."—H. A. Mark, Garden County, Nebr.

"David Fellows found drones flying and queen-cells started in the fore part of December, 1923; December 27 he found a virgin queen and that the old queen was missing; December 30 being a nice warm day at his home near Evansville, the bees were flying very strong, and as Mr. Fellows came to the colony with the virgin queen he lingered a moment. He was given an interesting surprise by seeing the virgin queen return from her mating flight. This is something I have never heard of in Indiana before. If others have, I would like to have their report."—C. O. Yost, in Indiana State Beekeepers' Association Monthly Letter.

A. I. Root's Story of His Own Life

The works of the Lord are great, sought out of all them that have pleasure therein.—Psalm 111:2.

(No. 9.)

Mr. Langstroth's description of an observation hive had quite captivated my fancy, and, as soon as I could get one made to my satisfaction, my small colony was compelled to spare the best comb of brood for that hive, and anxiously I watched for a queen-cell. It was several days before that curiosity appeared; but it did at last, and it was hard to say who paid the most attention to it, the bees or myself. They had the advantage over me as they could poke their heads into it incessantly while I was forbidden the coveted privilege of seeing what were the wonderful contents of that cradle of royalty. Here I was doomed to disappointment, for my wife one day informed me that the bees had left the queen-cell and that it contained nothing at all. As they had been at work on it only a few days I was compelled to go to Langstroth again for a solution of the difficulty. Sure enough, he did mention that bees, like people, sometimes made mistakes; but unlike people, they were always ready to correct them if an opportunity was offered. Therefore, we furnished them with some other brood-combs, and the bees went to work anew, and made a better royal cell, which seemed all right.

In capping one of the worker-cells, which was near the glass, the bees made the glass form a part of the capping so that we could plainly see the operations of the larva even after it had been sealed up. I was quite elated at this, as I thus had an opportunity of seeing the whole process; but, for some unknown cause after I had watched its movement for about two days, the cell was changed so as to obstruct the view. At that time the head had nearly approached the glass and seemed to be moving slowly almost incessantly.

My queen did emerge, although it was so late in the season that she probably never left the hive. She was hunted up and admired for the benefit of our friends. Her majestic gait and the homage paid her by the workers were fully observed until finally I felt that an Italian queen in her stead would be just about the desideratum.

$20 for a Single "Bug."

From the American Agriculturist I learned that my friend—as I thought he must be, after reading his work — L. L. Langstroth, still lived and had Italian queens for sale. On writing him he informed me that my project would be quite expensive and quite sure to fail, but that he could furnish me the queen to put into a full swarm as well late in the season as at any other time or perhaps better.

Well, as I had gotten the Italian queen fever I was bound to have one. Twenty dollars was a big price to pay for a single "bug," as my friends expressed it; but I thought that in bees as well as in other things, the best was generally the cheapest and surest, and so away went the $20.00 greenback, with an anxiety and impatience for the result not equaled by any later transaction even where hundreds of dollars were at stake. The days passed at length, as days always do, and the reply came. Shortly after I received the tiny movable-frame hive and the beautiful little strangers, as kind and gentle as kittens.

At first great preparation was made in order to have the entrance of the little hive at a window, as I supposed of course the bees would fly, but not one moved from the combs. Still the retiring, modest queen with her beautiful tapering form was already worth the $20.00 just to look at.

Great was my fear that the important ceremony of introduction to the black bees might miscarry in some way, and over and over again were the instructions read before I commenced. But my persecuted swarm probably thought there was to be no end to the innovations on their home, or rather mine, and so concluded to submit quietly to all that was imposed on them, rebelling little at being deprived of their queen which I came very near never finding. I removed the combs nervously, thinking it was like looking for a needle in a haystack, for all the world, when I accidentally came upon her. I had not yet faith enough in the books to believe the romantic idea that she had a sting but would use it only in case of invasion by royalty itself, and so I was afraid to take her in my fingers, as I should do now, but allowed her to get out of sight while I was trying to poke her off with a stick. A friend offered to help me hunt her if

I would provide him with a bird cage like my own, referring to my bee-hat, which at that time I always wore when working about the bees. But I thought I could find her myself as I knew where she was, that is, I knew what comb she was on, or supposed I did; but after a long search she was found on the floor hidden in a crack. She was secured and kept for a royal confab with my unfertile queen in the observation hive, which, by the way, took place according to program, ending in the downfall and death of the old queen and the victory of the young one. I intended to preserve the remains, but the bees had disposed of her by taking her out and carrying her away up in the air before I could get to them.

After six hours the Italian queen was placed in a cage on the frames, and at the proper time later when the cage was opened my heart stood still. As she suddenly disappeared between the combs, I drew a long breath of relief, for I knew that my highly esteemed $20.00 queen was safe.

The Large Amount of Honey Used in Rearing Brood.

After introducing so valuable a queen I began to think it would be advisable to feed my swarm up to a point beyond the probability of starving during the winter, and accordingly purchased enough coffee sugar to make 20 pounds of syrup, which I fed to them in the top of the hive as fast as they would carry it down; but, it being late in the season and the weather rather cool, they did not take it down very fast.

A friend interested in bees called on me just as I was feeding them the last of it, and he expressed a desire to see "Her Majesty." I opened the hive to find her and was surprised to have my bee friend tell me that they had not honey enough to last them two weeks. Where were the 20 pounds I had fed them.

I was at a loss then to tell, but I now think that it had entered largely into the composition of the young bees that I was so much delighted with—so much does it require for raising brood.

I continued feeding whenever they would take it, as I knew of no other way; and some warm weather coming in eight or ten days after, I had the satisfaction of beholding a golden shower of the little fellows playing in front of the hive, sporting in the sunshine, and making a display more beautiful to me than any fireworks, and their happy, joyous hum was the sweetest music.

This was all very well for a day or two, but my unseasonable feeding produced unseasonable flying; and the hive still being in an upper story, my young Italians would fall to the ground, and were unable to get back again. I now became convinced that an elevated situation is not the place for bees.

Accordingly I moved the hive down on the lower floor, but notwithstanding as much as a week or ten days of cold weather had intervened, a part of the bees went up to their old locality and were lost.

Strengthening a Weak Colony in Winter.

By the middle of December my hive contained very few bees and almost no honey at all. What was to be done?

I brought them into the house with a cloth over the front and got some real honey and fed them well; but there were so few bees that I was afraid to risk them; so I tried what I considered a bold experiment. I found where I could get some heavy Langstroth hives; brought them home; took a comb from each of four of them, bees, honey and all—looking them over carefully to avoid getting their queens; put the four combs and the bees into a box; shook them all up, so that each individual bee did not know whether she was herself or somebody else. I then shook the bees off from the comb, placed the comb in my Italian hive, and poured the bees on a newspaper in front of the hive, carefully looking them over to see that I had no black queens. (By the way, I think a newspaper or two much better than a cloth for hiving bees, as you can, by taking hold of the corner, shake the bees up near the hive with very little trouble, as they cannot stick to it at all.)

All seemed well. The bees went in as thankfully as if they had always lived there, and filled the hive up so as to make a nice swarm. But on going to look at them in the evening, I found a very long bee on the entrance board, dead. With a heavy heart I carried her in, and while mourning over my departed queen, as I supposed, behold she began to move, and then to crawl, and, on being fed, became quite lively. What to do with her now was the question. I finally put her into a cage, set her over one of the holes in the honey board, and I left her until morning, although for a queen, it seemed to me the bees paid her but scant attention.

In the morning she was "dead again," and this time would not come to life, even after warming and feeding. To make sure that she was the queen, I sent her to Mr. Langstroth, knowing that he could tell a queen when he saw one. I waited nervously for a reply, clinging to the hope that I might be mistaken.

In a few days a reply came, informing me that the bee enclosed was nothing but a worker bee, with its body consid-

erably distended with dysentery. This was welcome news, and it so far relieved my mind that I concluded to rest in peace and let my bees do the same until spring—which they did, coming out all right, with one whole frame of sealed honey untouched.

Why did the 25 or 30 pounds of syrup do so little good in comparison with the frames of sealed honey? Was it because brood-raising in the fall required so much? Does honey go so much further than thick sugar syrup? Or, was it due to the fact that the honey was sealed in the frames and just as the bees required it? I suspect all three had something to do with it.

First Attempt to Rear Queens.

I had read and re-read the instructions on Italian queen-raising until I almost considered myself an expert before trying it and was quite impatient for the season to arrive so that I might begin. About the first of April I commenced by removing the best frame of brood from my Italians, which were yet far from strong, although healthy and doing well. The frame was put in my observation hive so that I could inspect operations and I was much gratified to find that several queen-cells had been started the next morning. As the weather was bad it became necessary to feed the bees and all went well until about a week later when I forgot them so far as to let them get out of honey until they were mostly on the bottom-board. The cells had been torn open and the brood sucked dry even from the queen-cells. I fed them a little honey at first to observe the effect and noticed that as soon as one got a taste it hurried to its suffering companions, giving each one a little, which in its turn performed the same office until all became lively again, and then such a rejoicing and whirling about! I doubt if human beings rescued from starvation could have expressed more joy at the sight of plenty of food than did my bees.

This lot of queen-cells had to be given up, so I inserted a piece of fresh brood-comb. The bees did not starve again but somehow their queen-cell (they started but one) produced after about 18 days only a dead bee, having something the shape of a queen but only the size and appearance of a worker.

Another trial produced a similar result. I was considerably discouraged then, as far as early queen-rearing was concerned, and could not account for it, but now suppose it must have been owing to the small number of bees as they had become thinned down considerably and the weather was so bad they perhaps could not get a sufficient supply of the proper food to furnish the royal jelly.

To make a sure thing of it the next time, as it was near the end of May, I removed my Italian queen from her hive and introduced her to another. In 10 days I had 11 queen-cells and was much puzzled as to what I should do with them.

To get strong nuclei I removed two frames from each of my old hives, six in all, and put them into empty hives, looking them over carefully as the books directed, to avoid getting the old queens; but I was so bewildered by having to open so many strong hives that I probably would not have noticed them even if half of them had been queens. After having three queen-cells destroyed as fast as I inserted them I finally discovered that I had removed the black queens from three of the big hives. I was advised to return them; but, as it was so much trouble to find them, I thought I would keep them out and later introduce Italian queens when they became fertile, which operation took so long that I very seriously injured those colonies for the season.

For some reason or other I had never succeeded in getting my queens fertile until 10 to 15 days afterward, generally when they were about 12 days old. This was quite different from the time given by most writers on the subject.

First Year Not Profitable in Dollars and Cents.

In following the advice of an author to Italianize all old colonies before swarming, I did not get ready to make my swarms until nearly August, and, as the season was very poor here, my first year's beekeeping was not very profitable in dollars and cents; but, if experience is worth anything, I did well. In the fall, besides using all my surplus, I had to buy 100 pounds of coffee sugar for feeding, and and also to double up my eight colonies into four.

In June, just when the bees had commenced work in the boxes, I gave $10.00 for a box hive, and carried it home safely; but, as it was but a short distance, I thought I would keep them shut up for a day or two, so I fastened a piece of wire cloth over the entrance which was about 2 inches long by ½ inch wide, and also gave them some ventilation. In the afternoon, noticing they were densely packed about the entrance, I put them in the shade, but toward night I saw honey running out of the bottom. On opening the hive, I found the bees almost scalding hot and the combs and honey all melted down on to them. I inferred from this that bees need ventilation and plenty of it. Of course all I had left for my $10.00 was the strained honey and an empty hive.

Classified Advertisements

Notices will be inserted in these classified columns for 7c per word. You must say you want your advertisement in the classified columns or we will not be responsible for errors. For special conditions on bee and queen advertising please write us. Copy should be received by 15th of preceding month to insure insertion. Cash with copy, if credit has not been established previously.

REGULAR ADVERTISERS DISCONTINUED IN GOOD STANDING.

(Temporary advertisers and advertisers of small lots, when discontinued, are not here listed. It is only regular advertisers of regular lines who are here listed when their advertisements are discontinued when they are in good standing.)

E. Hassinger, Jr., W. X. Johnston, A. S. Tedman, A. F. Brown, G. M. Brewer, Floyd Markham, J. H. Corwin, J. E. Crane & Son, Brook Dale Farm, H. G. Quirin, Elmer Hutchinson & Son, W. A. Jenkins, Payne Co., Woodland Farm, Clyde V. Fisher, C. J. Appeldoorn, Fred R. Lance, M. C. Berry & Co., Poultry Tribune, Storrs & Harrison, Rhode Island Red Journal, A. H. Patch, Whitlock & Co., W. H. Laws, Dingee & Conard, Heller Bros.

HONEY AND WAX FOR SALE.

FOR SALE—1000 lbs. nice yellow beeswax. Bee-dell Apiaries, Earlville, N. Y.

FOR SALE—Honey in 60-lb. cans and 5-lb. pails. C. N. Ballard, Valois, N. Y.

LIGHT and dark amber honey in 5-lb. pails, 12 in case. R. C. Wittman, St. Marys, Pa.

FOR SALE—White clover honey in 60-lb. cans—none finer. J. F. Moore, Tiffin, Ohio.

CLOVER-BASSWOOD honey in new 60-lb. cans. Sample 20c. W. B. Crane, McComb, O.

FOR SALE—Fine quality clover honey in 60-lb. cans. Sample 10c. Geo. M. Sowarby, Cato, N. Y.

FOR SALE—Fine clover honey in new 60-lb. cans. Prices on request. Dr. C. G. Luft, Fremont, Ohio.

FOR SALE—White clover honey, new cans and case, two 60-lb. cans to case, $14.40. J. J. Lewis, Lyons, N. Y.

EXTRACTED honey, two 60-lb. tins, white clover, $14.50; light amber, $13.00. J. G. Burtis, Marietta, N. Y.

FOR SALE—Comb and extracted white clover honey. Prices on request. Dr. E. Kohn & Son, Grover Hill, Ohio.

FOR SALE—White clover honey in new 60-lb. cans, 11c per lb. Sample, 20c. Hoehn & Honigford, Ottoville, Ohio.

HONEY FOR SALE—In 60-lb. tins; white clover, 13c; for immediate shipment from New York. Hoffman & Hauck, Woodhaven, N. Y.

FOR SALE—Clover, amber and buckwheat honey in 5-lb. pails and 60-lb. cans. C. J. Baldridge, Homestead Farm, Kendaia, N. Y.

FOR SALE—40 cases fancy No. 1 white clover comb honey, $5.50 per case; 24 sections per case. Winkler Honey Co., Joliet, Rt. 1, Ill.

FINE quality clover honey, 60-lb. cans, $8.40; case of two, $15.60. Sample, 15c. Satisfaction guaranteed. Wm. F. Vollmer, Akron, N. Y.

FOR SALE—White clover honey in new 60-lb. cans, $12.60 per case f. o. b. here. Mrs. Alice Burrows, Oran, N. Y.

CHOICE extra-fancy white clover honey in new 60-lb. cans, 120 lbs. net, $14.00. Sample 20c. Edw. A. Winkler, Joliet, Ills., R. F. D. 1.

FOR SALE—White honey in 60-lb. cans, also West Indian in 50-gallon barrels. Samples and prices on request. A. I. Root Co., 16-18 Jay St., New York City.

FOR SALE—Extra-choice white clover honey, case or carload. Sample, 15c. Also about 60 cases choice light amber. David Running, Filion, Mich.

FOR SALE—One-ton clover honey, one and one-half to s light amber, also one-ton baker's stock honey. Write for prices. D. R. Townsend, Northstar, Mich.

FOR SALE—Choice clover extracted honey in new 60-lb. cans and cases. Also a few cans of amber honey. Write for price stating quantity desired. J. D. Beals, Oto, Iowa.

FOR SALE—A very fine quality of clover honey in new 60-lb. cans and 5-lb. pails. One case or carload. Also buckwheat honey in cans and kegs. H. B. Gable, Romulus, N. Y.

FOR SALE—Comb and extracted white clover honey, extracted in 60-lb. cans, and 5 and 10 lb. pails. Prices given on request. Sample, 15c. F. W. Summerfield, Waterville, Ohio.

FOR SALE—Honey in 60-lb. cans. Sweet clover, basswood, white clover and other flavors. Tell us what you want. Beekeepers who need more honey for their trade and solicitors should write us. A. I. Root Co., 230 West Huron St., Chicago, Ill.

HONEY AND WAX WANTED.

WANTED—Both comb and extracted honey. Name your best price in first letter. M. V. Facey Honey Co., Preston, Minn.

WANTED—A car or less quantity of clover honey in 60-lb. cans. Mail sample and quote lowest cash price for same. A. W. Smith, Birmingham, Mich.

OLD COMBS, cappings or slumgum wanted for rendering by steam press process. We pay cash for wax rendered, trade for supplies or work it into foundation. W. T. Falconer Mfg. Co., Falconer, N. Y.

WANTED—Shipments of old comb and cappings for rendering. We pay the highest cash and trade price, charging but 5c a pound for wax rendered. The Fred W. Muth Co., Pearl and Walnut Sts., Cincinnati, Ohio.

OLD COMBS WANTED—Our steam wax presses will get every ounce of beeswax out of old combs, cappings or slumgum. Send for our terms and our 1924 catalog. We will buy your share of the wax for cash or will work it into foundation for you. Dadant & Sons, Hamilton, Ill.

FOR SALE.

PURE beeswax rendered from cappings. Winkler Honey Co., Joliet, Ill.

FOR SALE—Tested alsike clover seed, $9.00 bushel. C. J. Baldridge, Kendaia, N. Y.

ROOT bee supplies and AIRCO foundation for 1924. A. V. Small, successor to C. F. Buck, Augusta, Kans.

SEND TODAY for samples of latest honey labels. Liberty Pub. Co., Sta. D., Box 4003, Cleveland, Ohio.

USED beehives. CLEAN. P. S. Crichton, 47 Alma Ave., Waverley, Mass.

FOR SALE—50 beehives, $1.00 each. L. F. Howden, Fillmore, N. Y.

GOOD second-hand cans, not rusty, 25c case. I. J. Stringham, Glen Cove, N. Y.

FOR SALE—Jumbo standard hives, painted, wired foundation. Bargain. Lewis Huff, Salem, Ind.

CONNECTICUT and Rhode Island headquarters for Root's beekeepers' supplies. A. W. Yates, Hartford, Conn.

SOUTHWESTERN distributors for Robinson's comb foundation. Send for price list. Holloway Bros., Marietta, Okla.

FOR SALE—Two Hatch wax presses, regular price, $15.00, our price, $10.00 each. The Stover Apiaries, Mayhew, Miss.

FOR SALE—Soiled cane sugar for feeding bees. Get your supply now for spring feeding. Winkler Honey Co., Joliet, Ill., Rt. 1.

30 EIGHT-FRAME shallow extracting supers with frames, painted, some used. Root make. Price 75c each. Arthur Brady, Medford Minn.

FOR SALE—Guaranteed genuine pure scarified Hubam clover seed. Northern grown. Prices on request. Edw. A. Winkler, R. F. D. No. 1, Joliet, Ill.

FOR SALE—Good second-hand 60-lb. cans, two cans to case boxed, at 60c per case, f. o. b. Cincinnati. Terms cash. C. H. W. Weber & Co., Cincinnati, Ohio.

ADAPTABLE BEEHIVES, single or double walled, are sound in principle and are practical. For free information address Geo. P. Wood, Peekskill, N. Y.

ATTRACTIVE LOW PRICES—Write us for list of odds and ends, shipping cases, hives, etc., first grade, priced to save you money. Dadant & Sons, Hamilton, Ill.

BLACK RASPBERRIES pay big profits. Easily grown anywhere. Bees sure do like their blossoms. Good plants for sale, reasonable. Frank Payne, Shawnee, Kansas.

ROBINSON'S comb foundation will please the bees and the price will please the beekeeper. Wax worked at lowest rates. E. S. Robinson, Mayville, Chau. Co., N. Y.

FOR SALE—My apiaries at Willcox, Ariz., 450 colonies, complete outfit for extracted honey. Excellent crop prospect. Will consider leasing. W. J. Stahmann, Clint, Texas.

LOOSE-HANGING white pine frames, 3c; queen cages, 2c. Sample on request. Ten-frame chaff hives, nailed not painted, $5.00. Write for particulars. Radloff Bros., Cable, Wis.

200,000 baby chicks, from fourteen best paying varieties. Hatched from selected northern-bred flocks. Prices reasonable. Write for catalog. Maple Dale Hatchery, Austin, Minn.

FOR SALE—45 10-frame Jumbo hive bodies with frames, $7.50 for five; 500 shallow extracting frames, $4.00 per 100; 200 Hoffman frames, $6.00 per 100. These are new goods in the flat. Martin S. Backer, Fulton, Mo.

FOR SALE—Bee business. Eleven apiaries with central extracting plant, truck and complete outfit for extracted honey. 700 colonies, Italians, in finest clover district in Ontario. A rare chance for some one. Apply to Knox & Tamblyn, Woodbridge, Ont., Can.

FOR SALE—100 two-story ten-frame colonies, 1924 Italian queens. Extracting outfit complete with 1918 Ford roadster, in northern California where crop never fails. Price $1000, $500 down and balance in honey when extracted. Loamland Apiaries, R. F. D. No. 4, Box 92, Chico, Calif.

FOR SALE—Standard dovetailed hives and supers. My prices are reasonable. Thos. Cordner, Sparta, Wis.

FOR SALE—Four-frame honey extractor, $23.50. First check takes it. Chris E. Yancey, R. F. D. No. 2, Box 40, Lowville, N. Y.

FOR SALE—Full-depth, 10-frame hive bodies or supers with or without unspaced frames, also bottoms and covers. Henry Eggers, Birchwood, Wis.

FOR BEST OFFER—500 Root beeway section-holders, new, K. D.; two-frame Cowan reversible extractor, little used. Chauncey E. Kelly, Halcott Center, N. Y.

FOR SALE—10- frame shallow supers, including Hoffman style frames in flat at 75c if ordered before April 1. Sample same price. Postage added. E. Gressman, Hamburg, N. Y.

IDAHO white-pine bee supplies, select material, excellent workmanship. Prices low. Satisfaction guaranteed. Write for sample and prices. John E. Thomson, Coeur d'Alene, Idaho.

FOR SALE—8 and 10 frame hives with super, bottom, honey board and Hoffman frames, standard size. No disease. In good condition. $1.00 each. Martin Fink, Cold Spring, Minn.

HONEY-NUT CHOCOLATES. A new and delicious confection made of pure honey, nuts, fruits, etc. $1.00 lb., 50c ½ lb., postpaid. Wholesale prices on application. J. D. Kroha, 87 North St., Danbury, Conn.

FOR SALE—30 Jumbo bodies, 75c each; 25 standard bodies, 65c each; 40 supers for 6¼-in. frames, 25c each; 10 each 4¼x4¼ and 4x5 comb honey supers, 20c each. All nailed and painted, no frames. A. H. Hattendorf, Ocheyedan, Iowa.

LONESOME? Then get "A DATE WITH YOUR HONEY" and enjoy the evening. HONEY-NUT CHOCOLATES, $1.00 per pound postpaid. Chocolate beehives full of honey and nuts, 2 for 25c or $1.10 per dozen postpaid. Fairmount Apiaries, Schuylkill Haven, Penn.

SUBSTANTIAL BINDER for Gleanings in Bee Culture, large enough to hold one complete year of 12 numbers, for $1.00. This is a price at cost to us. This binder provides the one best way to keep together and preserve your bee journal. The A. I. Root Co., Publishers, Medina, Ohio.

SPECIAL PRICES—We are offering at specially low prices some very high-grade material in shipping cases, frames, hives and miscellaneous which represent items we no longer carry regularly in stock or which have to be closed out to make room for new stock specially equipped to take Dadant's Wired Foundation. If interested, write for list; we can save you money. Dadant & Sons, Hamilton, Ill.

FOR SALE—Bargains. Near Nashville, Tenn., about 20 colonies of bees in very good shape, all guaranteed free from disease. Abundant equipment for handling same. 150 cases used 60-lb. cans, 25c per case. At Allensville, Ky., 150 brood-chambers with drawn combs, $2.50 per body; 35 bodies with drawn combs suitable for extracting only $1.50 per body; 60 empty shallow supers, 25c each; 25 empty deep supers, 50c each; 50 wood-wire excluders, 40c each; 85 metal covers with super covers, 70c each; 45 good bottoms, 25c each; 25 extra-good bottoms, 35c each; 14 bodies with empty frames, L depth, 70c each. All the above standard Root 10-frame goods, in splendid shape. Am changing to different hive. Porter C. Ward, Elkton, Ky.

WANTS AND EXCHANGES.

WANTED—Gleanings October 1, 1915. Will pay fair price. A. J. Schultz, Ripon, Wis.

WANTED—Four-frame reversible extractor. Verdigre Apiary, Verdigre, Nebr.

WILL trade package bees for white honey. Mail sample. Van's Honey Farms, Hebron, Ind.

WILL EXCHANGE small printing press for bee supplies. C. S. Bumgarner, Lansing, N. C.

EXCHANGE—International chemistry course for bee supplies. Geo. Abeler, Highwood, St. Paul, Minn.

WANTED—Power extractor, 4, 6 or 8 frame, with or without engine. Claude Pease, Cartersville, Mont.

FOR SALE OR EXCHANGE—One ten-inch roller foundation mill for apiary supplies or large incubator. C. H. Dillabough, Boardman, Oregon.

BEES AND QUEENS.

HARDY Italian queens, $1.00 each. W. G. Lauver, Middletown, Pa.

PACKAGE BEES—Circular free. Van's Honey Farms, Hebron, Indiana.

NUCLEI, packages, queens for 1924. Send for circular. Allen Latham, Norwichtown, Conn.

SEE our advertisement for PACKAGE BEES on page 188. Loveitt Honey Co., Phoenix, Ariz.

FOR SALE—40 colonies of bees guaranteed free from disease. Steen Freeman, Peebles, O.

PACKAGE BEES, NUCLEI AND QUEENS. Write for prices. J. J. Scott, Crowville, La.

FOR SALE—Three-banded leather-colored queen bees. None better. Write for prices. M. Bates, Greenville, Ala., R. F. D. No. 4.

WE can still furnish a few bees if you find us here in the "Classy Fied." Bees shipped when we promise. J. G. Puett & Sons, Moultrie, Ga.

PINARD'S Quality Queens and package bees. Now booking orders for 1924. Circular free. Yours for better bees. A. J. Pinard, Morgan Hill, Calif.

BEFORE placing your order for bees and queens for 1924 delivery, write to us for special prices on quantity lots. The Stapleton Apiaries, Colquitt, Ga.

NUCLEI—I am offering for sale 1000 three-frame nuclei containing a good tested three-banded Italian queen in each, $4.00 each, for 1924 spring delivery. John St. Romain, Marksville, La.

BUY your packages and nuclei WITH QUEENS INTRODUCED and avoid loss. Best pure mated Italian queens, guaranteed. State inspected. No disease. A. O. Smith, Mt. Vernon, Ind.

FOR SALE—Italian queens, $1.00; 3-frame nucleus, $5.00. 10 per cent books order. Full colonies, $10.00. Supers, frames, complete hives. Send for prices. Hickory Shade Apiary, Otterville, Mo.

20 to 40 per cent discount on package bees to be shipped between May 15 and 25. Write for prices and particulars. Free of disease, good service and satisfaction guaranteed. Tupelo Apiaries, J. L. Morgan, Apalachicola, Fla.

FOR SALE—Prize-winning Italian bees and queens. 2 pounds bees with untested Italian queen, $4.50; 2 pounds hybrid bees with untested Italian queen, $4.00. W. S. Johnson, Alexandria, La.

BRIGHT Italian queens, 1, $1.00; 12, $10.00; 100, $75.00. Write for prices on package bees. T. J. Talley, Greenville, R. F. D. No. 3, Ala.

FOR SALE—70 colonies Italian bees in good condition. All colonies guaranteed to be free from disease. R. S. Sheldon, New Smyrna, Box 543, Florida.

FOR SALE—Bright Italian queen, $1.00; 6, $5.00; 1-lb. package bees with queen, $3.00; 2-lb. package with queen, $4.50. Powell Owen, Greenville, Ala.

BEFORE placing your order for bees and queens for 1924 delivery, write to us for special prices on quantity lots. The Stapleton Apiaries, Colquitt, Ga.

GOLDEN ITALIAN queens, producing large beautiful bees, solid yellow to tip. Package bees, nuclei circular, 1924, ready free. Dr. White Bee Co., Sandia, Texas.

NORTHERN BEES PAY. Fresh, active bees, less express, 2 lbs. with select queen on frame of foundation, $5.75. May delivery. Scott Apiaries, La Grange, Ind.

ORDERS have been coming in briskly for packages, but I have a few more that I can spare. A card will bring my circular and price list. R. V. Stearns, Brady, Texas.

FOR SALE—60-100 colonies of bees, mostly Italians. All colonies guaranteed free from disease. Everything up-to-date. Write for particulars. Duane Shaw, Palestine, Ill.

WE want you to remember us when you think of getting those queens a little later on. Will have a lot of nice ones at reasonable prices. R. V. Stearns, Brady, Texas.

PHELPS GOLDEN QUEENS will please you BEAUTIFUL, GENTLE and PROLIFIC. $2.00 each; $18.00 a doz., 6 for $10.00. C. W. Phelps & Son, 3 Wilcox St., Binghamton, N. Y.

FOR SALE—100 to 650 colonies of bees in two-story hives, with or without equipment. All colonies guaranteed to be free from disease. W. H. Bartleson, Las Animas, Colo.

BEES—Three-pound packages, three-frame nuclei and three-frame nuclei with two and one-half pounds extra bees. April and May delivery. None better. Address Running Apiaries, Sumterville, Ala.

GOLDEN ITALIAN queens for sale. 1, $1.00; 6, $5.00; 12, $10.00; 100, $75.00. Package bees in season, 20 per cent to book your order for spring delivery. J. F. Rogers, Greenville, R. D. 3, Ala.

FOR SALE—Golden Italian queens, untested, $1.00; 6 for $5.40; 12 or more, 80c each; tested, $1.50 each; select tested, $2.50 each. Write for price on large quantity. No disease of any kind. Safe arrival and satisfaction guaranteed. Sam Hinshaw, Randleman, N. C.

BOOKING orders for three-banded Italian bees and queens; two-pound packages with select untested queen, $4.25; 10 or more, 10 per cent discount. Select untested queens, $1.00; select tested, $1.50. Satisfaction guaranteed. J. Allen, Catherine, Ala.

ITALIAN QUEENS, 1 to 5, $1.00 each; 6, $5.50; 12, $10.50; 1 lb. bees with queen, $3.00; 2 lbs. bees with queen, $5.00; 3 lbs. bees with queen, $7.00. We pay delivery charges up to Zone 6. Graydon Bros., Greenville, R. F. D. No. 4, Ala.

FOR SALE—700 colonies Italian bees, all colonies requeened last July and August and guaranteed free from disease. Equipment like new. 100 Root double-wall and balance ten-frame Standard hives. All combs built from full sheets wired. Am selling to reduce account other business, am unable to handle so many. If interested, write B. F. Shumway, Reinbeck, Iowa.

CERTIFIED ITALIAN BEES—150 full colonies of this fine strain of leather-colored stock will be sold as usual to make room for necessary increase. Charles Stewart, Johnstown, Box 42, N. Y.

THREE-BANDED bees and queens, government inspected. 2-lb. package with select queen, $5.00; select tested queens, $2.50; untested, $1.00 each or $10.00 per dozen. Carolina Bee Co., W. O. Curtis, Mgr., Rt. No. 1, Graham, N. C.

SELLING 2-frame nuclei and 2-lb. packages with select untested Italian queen, at $3.25 each. Will book a limited amount at this price during March. If interested in large quantities write at once. Everything guaranteed. Baughn Stone, Clarksville, Texas.

GOLDEN Italian Queens for 1924. The big bright hustling kind. Satisfied customers all over the U. S. Untested, $1.00 each; 6 for $5.00; 12 for $10.00; 100, $75.00; tested, $1.75. A few 2-frame nuclei at $4.50 with queen. E. F. Day, Honoraville, Ala.

FOR SALE—Three-band Italian queens and bees for spring delivery. One 3-frame nucleus with one pound extra bees, with untested queen, for $5.00. Write for prices on larger quantities. No disease. Safe delivery and satisfaction guaranteed. J. E. Arthur, Register, Ga.

LET Townsend do your worrying. Send him your money and he will buy your package bees for you of his neighbors and guarantee that they will reach you in good condition, or he will see to it that they are replaced at once. See Bulletin No. 11 on page 195 of this number of Gleanings.

HIGH-PRODUCING BEES AND QUEENS—We can still accept a few more orders for package bees and queens for spring shipment. Place your order now. We ship 2-lb. packages only. Safe arrival and satisfaction guaranteed. Write for circular and price list. J. M. Cutts & Son, R. D. 1, Montgomery, Ala.

BUY ITALIAN bees from shipper farthest north. Get hardy stock and save expressage. Satisfaction guaranteed. 20 years' experience. Three-frame nuclei and tested queen, $5.00; select tested, $6.00. Orders booked for spring delivery by S. G. Crocker, Jr., Roland Park, Baltimore, Md.

NOTICE—I am no more at Scotts Station, Ala., but will sell queens and bees from my old home till further notice. Three-band queens, $1.25 each; $12 per doz.; 3-frame nuclei and queen, $6.00. Free from disease and pure mating guaranteed. For large lots write. Curd Walker, Queen-breeder, Jellico, Tenn.

GOLDEN Italian Queens, untested, about May 1, $1.00; 6 for $5.40; 12 or more, 80c each; tested, $1.50; select tested, $2.50. I can mail tested and select tested of last fall's rearing as soon as the weather will permit. No disease. Good queens. Safe arrival and satisfaction guaranteed. D. T. Gaster, Randleman, R. F. D. No. 2, N. C.

PACKAGE BEES and QUEENS. DELIVERED—Bright Italians, 2-lb. packages, with selected queen: 1-5, $4.75; 5-25, $4.60; 25-50, $4.40; 50 or more, $4.25. Queens, selected, untested, 1, $1.00; 12, $10.00. Safe arrival and satisfaction guaranteed. No disease. Ship nothing but the best. 20 per cent cash books order. Begin shipping April 15. W. C. Smith & Co., Calhoun, Ala.

ITALIAN QUEENS—Three-banded, bright and leather-colored. Keil superior strain, as raised and sold by him for the past two years. Free advice on beekeeping problems. Introduction instructions mailed when queens are shipped. Satisfaction guaranteed. Price May 15 to July 1, $1.50; 10 for $12.00; July, August and September, $1.00 each. A trial will make you our regular customer. A. T. Keil, Treesdale Farms, Mars, Butler County, Penn.

FOR SALE—40 colonies of bees in 8-frame hives. All colonies guaranteed free from disease. Fred Hankins, Kinmundy, Ill., Rt. 4.

GOLDEN Italian Queens bred by an experienced breeder. Price, $1.25 each; $11.00 per doz. Honoraville Bee Co., Honoraville, Ala.

MY five-banded golden queens will be ready April 1. 1 queen, $1.00; 6 queens, $5.50; 12 queens, $10.00. W. W. Talley, Greenville, Ala., Rt. 4.

FOR SALE—10 colonies of Italian bees in 10-frame hives in good condition and guaranteed free from disease. Price $10.00 per colony. Alvin Buff, Frost, Ohio.

DIXIE MAID Bright Italian Queens. Select untested, $1.25 each, $12.50 per doz. Untested, $1.00 each, $11.00 per doz. 2-lb. package, $5.00. Write for special prices on large orders. P. B. Skinner, Greenville, Ala.

FOR SALE—One to fifty colonies of bees in 10-frame hives, several hundred wood-wire excluders and much other desirable beekeepers' stuff. All colonies guaranteed free from disease. A. W. Smith, Birmingham, Mich.

FOR SALE—60 colonies Italian bees and apiary equipment. No disease. 6-room house and ¾ acre bearing fruit. Splendid location. Local market for all honey. Leaving city. Price reasonable. W. H. Montgomery, 1830 South Ave., La Crosse, Wis.

FOR SALE—Queens, $1.00 each, with one patent frame free with each order. Quantity orders less. Queen-breeders, try our cages. Sample free. Part cash, part bees and queens. We will ship package bees from several different states. If you want our frames, order them early. F. M. Russell & Co., Roxbury, Ohio.

IF you buy queens in a wholesale way of 25 or more at a time, you will make a mistake if you do not write Townsend before buying. He has a surprise for you in prices. Address E. D. Townsend, Loreauville, La., where the "good queens" come from. See Bulletin No. 11 on page 195 of this number of Gleanings.

FOR SALE—Carload of bees, also nuclei and pound packages of hustling three-band Italians. 3-frame nuclei, with queen, $5.00 each; 2-frame nuclei, with queen, $3.75 each; 3-pound package with queen, $5.00; 2-pound package, with queen, $3.75; 1 queen, $1.00; 12 queens, $11.00. Orders booked free. W. E. Buckner, Mt. Vernon, Ga.

SPECIAL two pounds Italian bees shipped on frame emerging brood and honey, queen introduced and laying, $4.75 each. Ask for prices regular packages and nuclei. Select untested bright Italian queens, $1.00. Health certificate with all orders. Safe arrival, good service and satisfaction guaranteed. Tupelo Apiaries, J. L. Morgan, Apalachicola, Florida.

SEVERAL hundred 2-pound packages bees in lots of 25 or more, $3.25 each; few hundred 4-pound packages in lots of 25 or more, $5.00 each. Each package includes a three-banded selected untested queen and a frame of honey and brood, the natural feed for transit. Queens are introduced if wanted. 10 per cent books your order. C. A. Mayeux, Hamburg, La.

PACKAGE BEES FOR 1924—Yancey hustlers; they get the honey. Three-band strain only. Now booking orders for spring delivery. Place your order early and make sure of shipping date; 10 per cent will book your order. We do not book more orders than we can fill promptly. Safe arrival and satisfaction guaranteed on every package and queen shipped. Caney Valley Apiaries, Yancey Bros., owners, Bay City, Texas.

GET your queens from an outfit that never has had any brood disease. I was queen-breeder for W. D. Achord the past three years. Have the best three-banded Italian stock obtainable. Prices till May 15, 1, $1.25; 10, $10.50; 25, $25.00; 50, $45.00. 20 per cent reserves shipping date. I do my own work and know how. Pure mating and satisfaction guaranteed or money promptly refunded. Special prices on large orders. W. E. Streetman, Reynolds, Ga.

PACKAGE BEES and ITALIAN or CARNIOLAN QUEENS. I save you express charges on northern shipments from my yards near Redding, Cal. (most northern point in California where EARLY PACKAGE BEES and QUEENS can be reared). Eastern and northern shipments via Ogden, Utah, are shipped from San Jose. Untested queens, $1.00; bees, $1.50 per pound. Attractive prices on large orders. J. E. Wing, San Jose, Calif.

LET me book your order for bees, April and May delivery, the hustling kind, Italians. Three pounds of bees shipped on a Hoffman frame of brood and honey with a select untested Italian queen, the real start. 1 to 20 packages, $4.75 per package; 25 packages for $112.50; 50 packages for $212.50; two-pound or four-pound packages a matter of correspondence. Queens, untested, 90c each; tested, $1.40 each. Certificate of health accompanies each shipment. Safe arrival and satisfaction guaranteed. E. J. Beridon, Jr., Mansura, La.

MISCELLANEOUS.

THE BEE WORLD—The leading bee journal in Britain and the only international beereview in existence. It is read, re-read and treasured. Will it not appeal to you? Specimen copy free from the publishers. The Apis Club, Benson, Oxon, England. Send us a postcard today. It is well worth your little trouble.

HELP WANTED.

WANTED—Experienced beeman to take charge of five hundred hives of bees. W. J. Stahmann, Clint, Texas.

WANTED—Comb honey man, also helper, state wages expected. References exchanged. R. S. Becktell, Rifle, Colo.

WANTED—For season of 1924, two industrious young men of good habits, to work with bees and assist on farm. N. L. Stevens & Son, Venice Center, N. Y.

WANTED — Experienced beekeeper from May 1 to November 1, with chance for permanent position. Give age and experience. Beedell Apiaries, Earlville, N. Y.

MARRIED MAN wanted for work in modern apiaries. House and lot furnished. State age, weight, height, experience and wages desired. E. L. Lane Trumansburg, N. Y.

WANTED—Clean, honest and industrious young man experienced in queen-rearing to work 190 colonies on shares and furnish queens for our trade. Married man preferred. D. L. Ulman, Saginaw, West Side, Michigan.

WANTED—Young man to learn the queen and package business, beginning March 1. Will furnish board and pay small wages. Give references and full particulars in first letter. J. M. Cutts & Son, R. F. D. No. 1, Montgomery, Ala.

WANTED—Young man with some experience (May 15 to October 15) who really wants to improve himself, where honey is produced by the carload. State age, height, weight, occupation, wages expected. H. D. McIntyre, Durham, Ont., Canada.

WANTED—A young man with some beekeeping experience to assist in caring for 350 colonies of bees for the production of extracted honey. Begin work April 1. Board and lodging furnished. H. B. Gable, Romulus, N. Y.

WANTED—Single, young or middle-aged man of good habits to work with bees for season of 1924, beginning April 1. Room and board furnished. Please give qualifications and wages expected in first letter. F. D. Lamkin, Poplar Ridge, Cayuga County, New York.

WANTED—Clean, active and ambitious young man to assist in our Michigan apiaries. Give age, height, weight and experience, if any, and wages expected in first letter. A good place to learn commercial beekeeping. Address me at Sumterville, Alabama. David Running.

WANTED—A clean, capable, reliable young man to run apiary of 125 colonies for comb honey and work small farm. Monthly wages. Give reference, age and wage desired in first letter. Work at once. Mrs. Geo. E. Goodwin, Lyons, R. F. D. No. 1, Mich.

WANTED—A young man of energy and character, who wishes an opportunity to learn practical beekeeping where carloads of honey are produced. Every chance to learn, and small wages given. Write, giving age, height, weight, former employment, habits, experience, photo, all in first letter. Over 1,000 colonies, 14 apiaries. E. F. Atwater, Meridian, Idaho. (Former Field Agent in Beekeeping, U. S. Dept. Agri.)

WANTED—Single, conscientious, energetic assistant, experienced in extracted honey production desiring long-term employment, to help in 600 to 700 colony business, and general farming on large scale, when not busy with bees. Must be mechanically inclined. Give present occupation, age, height, weight and wages expected in first letter, as well as references regarding character, experience with bees, farm work, etc., or expect no reply. Steady job for right party. Objection to cigarettes and tobacco-chewing. Our equipment is strictly modern, and we practice only the most improved methods, while our large buildings afford the very best of working conditions. Further particulars on request. The Hofmann Apiaries, Janesville, Minn.

SITUATION WANTED.

WANTED—Work in large apiaries, experienced beeman. Married, age 35. American. B. E. Glick, Plaza, N. D.

POSITION wanted with progressive beekeeper to learn the business. Have little experience. Eddie Dare, Barrington, Ill.

SITUATION WANTED—In apiary, young man of 20, three years' experience. References. George Cameron, 506 Mt. Clemens St., Pontiac, Mich.

EXPERIENCED man wants work in Rocky Mountain district with comb-honey producer. References exchanged. Andrew Marett, Denver, Colo.

TWO German men, single, 32 and 23, want a position in a modern apiary. One is experienced with German beekeeping. One inexperienced. If possible together or single positions. Speaking English. Write specialties. E. Pfeil, 23 Division St., Jamaica, L. I., N. Y.

TOO LATE FOR CLASSIFICATION.

FOR SALE—60-pound cans, used once, washed outside, good cases, 50 cents per case of two, if taken at once. f. o. b. Brunner, the Beeman, 3836 N. Kostner Ave., Chicago, Ill.

Root Quality Queens and Bees

QUEEN PRICES APRIL 15 TO OCTOBER 15.

Quantity:	1 to 9.	10 to 24.	25 to 49.	50 to 99.	100 or over.
Untested	$1.50 each.	$1.35 each.	$1.25 each.	$1.10 each.	$1.00 each.
Select Untested...	2.00 each.	1.80 each.	1.70 each.	1.55 each.	1.45 each.
Tested	2.50 each.	2.25 each.	2.10 each.	2.00 each.	1.85 each.
Select Tested	3.00 each.	2.70 each.	2.55 each.	2.40 each.	2.25 each.

NOTE—Inasmuch as we are unable to furnish Northern-bred Root "Quality" untested queens before June 15, we will be prepared to fill early orders for untested queens from our Root "Quality" stock at Bay Minette, Alabama.

OUR GUARANTEE ON QUEENS.

We guarantee safe arrival of queens sent in mailing cages. We agree to refund the money or replace the queen if the one first sent arrives dead; provided the beekeeper receiving the dead or unfit queen notifies us and returns her at once and in her own shipping cage, properly marked with name and address of sender. No delay in returning the queen can be permitted. This guarantee applies only on queens sent to customers in the United States and Canada.

PRICES OF BEES IN TWO-LB. COMBLESS PACKAGES BY EXPRESS.

APRIL 15 TO AUGUST 15.

Quantity:	1 to 9 pkgs.	10 to 24 pkgs.	25 or more pkgs.
2-pound packages of bees....	$6.00 each.	$5.50 each.	$5.00 each.

Add price of queens wanted to package price given above. Large quantity lots quoted on application. These prices are F. O. B. shipping point. Note—Early spring delivery on package bees will be made from Bay Minette, Alabama. Beginning May 20, package bee orders can be filled from Medina.

OUR GUARANTEE ON BEES SHIPPED BY EXPRESS.

We agree to make good any loss to bees in transit, provided consignee secures such notation as will cover any apparent damage done while in transit, on express delivery receipt, signed in full by express agent, **receipt to be mailed to us at once** with letter giving full particulars, on receipt of which replacement will be made immediately. This guarantee applies only on bees shipped in the U. S. A. east of the Rocky Mountains and to points in Canada in the Province of Ontario. To all other points in the United States and Canada we ship only at the customer's risk. We do not ship bees to other foreign countries.

THE A. I. ROOT CO., West Side Sta., Medina, Ohio

Superior Italian Bees and Queens

One customer produced 20,000 pounds of surplus honey from 43 colonies of our SUPERIOR ITALIAN BEES and our prices are as low as anyone can make on the same quality goods.

Two-pound package and 2-frame nuclei with queen.....$4.50; 10 or more, $4.00
Three-pound package and 3-frame nuclei with queen.... 5.50; 10 or more, 5.00

SUPPLY THAT NEEDED ROOM

The customer who produced the 20,000 pounds of surplus honey from 43 colonies uses Jumbo hives. The most successful producers are using larger hives. If you have regular hives, you need not destroy them but simply buy shallow or deep supers. Just figure how cheap we can supply this room for you.

SAVE THIS DIFFERENCE IN PRICES

100 10-frame shallow dovetailed supers with frames $70.00
25 10-frame shallow dovetailed supers with frames 18.75
100 8-frame shallow dovetailed supers with frames 62.00
25 8-frame shallow dovetailed supers with frames 16.75
Medium brood fdn., lots of 5 lbs., 64c; in 25-lb. lots, 58c, or just a little over 4c a sheet.
100 10-fr. full-depth supers or bodies with frames.....$115.00
100 8-fr. full-depth supers or bodies with frames 105.00
All bodies made of good cypress and dovetailed.
Medium brood foundation, 5 lbs., 64c; in 25-lb. lots, 58c, or only a little over 7c a sheet.
Send 10c for a sample Hoffman frame and save more than $10.00 on 500 frames.
Good used 7-wire and wood excluders at 50c each.

WRITE FOR OUR 1924 CATALOG **THE STOVER APIARIES, MAYHEW, MISS.**

The Diamond Match Co.

APIARY DEPT.

Manufacturers of

BEEKEEPERS' SUPPLIES

CHICO, CALIFORNIA, U. S. A.

The entire resources of this great plant are now near to you

The Diamond Match Co.'s Factories and Yards at Chico, Calif., cover 220 acres.

To meet the ever increasing demand for "Diamond" Beekeepers' Supplies, distributing warehouses have been established at Woodhaven, New York (Hoffman & Hauck); St. Louis, (The Diamond Match Co.); New Orleans, (The Diamond Match Co.). This will enable Beekeepers to obtain their supplies promptly and at a greatly reduced cost.

PRICE

Every dollar paid stands for actual value received; no money that is paid us is wasted in inefficient methods or by lack of intelligent foresight. From the falling of the tree to the finished hive, no middleman takes out a profit; full advantage of this saving is given to the purchaser.

Our emblem the "Diamond" is protected by excellence of workmanship.

THE DIAMOND POINTS OF DISTRIBUTION.

QUALITY

Diamond Hives, etc., which are manufactured from Sugar Pine from our own forests present every desirable feature, and embody every improvement in design and betterment in construction. Diamond Hives have a reputation for high quality well nigh world-wide.

Beekeepers who study economy should consider the use of the Diamond Standard Supplies in their apiary. Diamond Foundation is uniformly excellent and means Foundation Satisfaction.

Write the Diamond Match Co., Apiary Department, Chico, California, for free catalog. Send all orders and inquiries to Chico, Calif. Shipment will be made from nearest distributing point named above.

(Continued from page 132.)

ket steady. Comb: Sales to retailers, 24-section cases Minnesota, white clover No. 1, $5.50-6.00. Colorado, No. 1 white sweet clover and alfalfa, $6.50-7.00. Extracted: Sales to retailers, confectioners and bakers, per lb., Minnesota and Wisconsin, white clover, 12-12½c. Western, light amber alfalfa and sweet clover, 11½-12c.

NEW YORK.—Extracted: Since last report foreign receipts very light. Domestic receipts moderate. Demand moderate, market steady. Sales to jobbers, wholesalers, confectioners, bakers and bottlers, per lb., New York, white clover, 12-12½c, buckwheat, 10-10½c; California, light amber sage, 12-13c. Intermountain, white sweet clover, 12-12½c. Porto Rico, market slightly stronger, 82-88c, mostly 85-86c per gal. Beeswax: Since last report 239 pkgs. beeswax England, 110 bags Germany, 10 seroons, 5 bags Santo Domingo, 39 bags Cuba, 29 pkgs. Chile, 24 sacks Argentina arrived. Demand good, market firm. West Indies, light 28c, dark 22-23c, Africa, dark 22-23c.

PHILADELPHIA.—No large arrivals since last report. Holdover supplies light. Demand light, trading slow. Market about steady and very quiet with practically no change in prices. Extracted: Sales to manufacturer and bakers, Porto Rico, light 92c, amber 90c per gal. New York, fancy white clover 13c, buckwheat 11c per lb. California, white alfalfa, 9½c per lb.

H. C. TAYLOR,
Chief of Bureau of Markets.

The A. I. Root Company's Report.

We have purchased nothing since our last report but extracted white clover honey. One carload was bought at 9½c per pound for very best quality, and several small lots were received at the same price with stock not quite so light in color, bringing 9c per pound. All prices f. o. b. shipping point.

Special Foreign Quotation.

LIVERPOOL.—Since our last report there has been no change in values. The market has kept quite firm, a fair business being done, and buyers are now awaiting offers of new crop. Owing to the rate of exchange ($4.33 to £), this will work out about 9 cents per lb. for extracted honey. The price of beeswax is equal to 27 cents per lb. Taylor & Co.

Liverpool, England, Feb. 4.

From Producers' Association.

The honey situation throughout the Intermountain region is in a very satisfactory condition. There is but little extracted honey in carload lot comparatively unsold, and with a reasonable demand this should all be cleaned up some time before the new crop comes on. As for comb honey, we do not know of any fair-sized lots that are available; most localities are entirely bare and there is only here and there a small lot held back for home consumption. Bees have apparently wintered better than was expected, and, if weather conditions from now on should be reasonable, the probabilities are that the loss will not be near as heavy as was originally expected.

The Colorado Honey Producers' Ass'n.,
Denver, Colo, Feb. 16. F. Rauchfuss, Sec.

Trade Notes.

200 used empty 10-frame standard hives with metal roof covers less inner covers. Hives in good condition. A bargain at $2.15 each.

200 used empty double queen-mating hives, standard Langstroth size, in splendid condition, just what a queen-breeder would need; $2.60 each.

These prices are f. o. b. Medina, Ohio.
The A. I. Root Co., Medina, Ohio.

The Story You've Been Waiting to Hear----

How European Foul Brood Can Now Be Conquered!

Seldom has anything ever startled or delighted the beekeeping fraternity like this story of how E. F. B. has at last been conquered. Beekeepers everywhere are elated at the new possibilities. Here is how it all happened.

General Laboratories, an organization that makes and markets other farm sterilizers and disinfectants, started a series of experiments with European Foul Brood. Many veteran beekeepers who were frankly skeptical of any new plan of treating E. F. B. were invited to join in the experiments so that accurate results would be obtained.

The new findings were confirmed by severe tests under practical apiary conditions. Some of these apiaries are among the best known in the Northwest.

In states where losses from foul brood had become most serious, their agricultural colleges tried it out. They have become enthusiastic and are now recommending it.

What is this unusual discovery? How can it benefit you?

A Special Sodium Hypochlorite Does It.

What General Laboratories did was simply to make a special sodium hypochlorite and develop a way for apiarists to use it successfully.

Be-Helth is the name of this wonderful sodium hypochlorite solution that is now such a boon to beekeepers everywhere. You need suffer E. F. B. losses no longer. Feed Be-Helth in sugar syrup from the first day the bees are put out in spring. They will clean out dead larvae quickly. Brood will be healthy and strong. Heavy honey production will follow.

No risk in a trial of Be-Helth. Your money refunded if you are not satisfied.

Send for your trial gallon today. Full directions, including what Be-Helth will do for A. F. B., with each package. Your apiary is not safe without Be-Helth. Mail the coupon now.

General Laboratories, Dept. 91,
Madison, Wisconsin.

Gentlemen: Please send me 1 gallon of Be-Helth and literature on how to use it for E. F. B.....A. F. B..... Enclosed is my check for $3.00.

Name .....

Address .....

(Continued from page 169.)

the packing built in. While such a hive is more expensive than the single-walled hive it saves the expense of the outer case for winter and the labor of packing, and also affords protection for the colony in summer. The double-walled hive has the same inside dimensions as the single-walled hive so that all of the parts of one style will fit the other.

The frames are made self-spacing—that is, the end-bars are in contact a part of the way down to hold the frames the right distance apart. By far the nicest self-spacing frames to handle are the metal-spaced frames, since they are not glued together by the bees as are the wood-spaced frames.

Attention Needed in March.

In the North bees need practically no attention during March, provided they have enough honey. The amount of honey the bees have on hand can be determined approximately by weighing the hive and its contents and comparing this weight with the weight of a hive filled with empty combs, or the cover can be taken off and some of the combs lifted part way up to see if honey is present. There should be at least 15 to 20 pounds of honey in the hive at this time to make the colonies safe. If any are found short of food they can be fed by selecting a warm day. For feeding bees in cold weather the best plan is to give them a cake of hard candy made of granulated sugar and water boiled until the test shows it to be hard and brittle.

It is also possible to feed sugar syrup made of equal parts of sugar and water by volume, if a warm day is chosen to do this. While still warm the syrup should be put into a friction-top pail having about 30 holes punched in the lid. This is then inverted and placed directly on top of the frames in contact with the bees. An empty hive body must be put on top when feeding is done in this way, and the frames should be covered with burlap bags or old clothing to keep the bees warm.

PACKAGE BEES

2 AND 3 POUNDS

We do not claim that our Italian queens and bees are the best, but we **do claim** that they are as good as **any**. To prove our assertion, give them a test. Receive **fresher bees**, and **save** express charges. Circular free.

VAN'S HONEY FARMS, HEBRON, INDIANA

450,000 TREES.

200 varieties. Also Grapes, Small Fruits, etc. Best rooted stock. Genuine. Cheap. 2 sample Grape-Vines mailed for 20c. Catalog free. West Hill Nurseries, Inc., Box C Fredonia, N.Y.

GRAY CARNIOLANS

are hardy, gentle, extremely prolific and as honey gatherers are unexcelled. Highly disease-resistant, winter admirably and build up very quickly in the spring. **Selected breeding mothers imported in 1923 insure the purity of our stock.**

WRITE TODAY for our free 8-page circular, which gives you fully the history, merits, prices of queens, etc., of this hardy race. It is well worth your little trouble.

W. A. HOLMBERG -:- DENAIR, CALIF.

ALUMINUM CHICK FEEDER for **FEED, GRIT, MILK or WATER.** Simple, safe and sanitary. Chicks cannot get feet into contents. Send 30c cash or stamps for one postpaid. Money back if not satisfied. **30c**

American Poultry Journal, 460-523 Plymouth Ct., Chicago

850,000 GRAPE-VINES

66 varieties. Also Small Fruits, Trees, etc. Best rooted stock. Genuine. Cheap. 2 sample vines mailed for 20c. Descriptive catalog free. West Hill Nurseries, Inc., Box C, Fredonia, N.Y.

Gladioli & Dahlias

50 Gladioli bulbs, blooming size, $1 prepaid. Write for catalog.

W. H. TOPPIN, MERCHANTVILLE, N. J.

GUARANTEED TO LIVE

Pure-Bred Chicks, Low prices. Best laying kinds. Also, Turkeys, Ducks, Geese. Catalog Free. **Jas. W. Houck & Co., Box 83 Tiffin, O.**

KITSELMAN FENCE

"I Saved $28.40," says I. D. Wasson, Orbisonia, Pa. **You, too, can save** by buying direct at Lowest Factory Prices. **WE PAY THE FREIGHT.** Write today for Free 100-page Catalog of Farm, Poultry and Lawn Fence, Gates, Posts and Barbed Wire.

KITSELMAN BROS. Dept. 31 MUNCIE, IND.

Patents Practice in Patent Office and Court. Pat. Counsel of The A. I. Root Co.

CHAS. J. WILLIAMSON,
McLachlan Bldg., Washington, D. C.

Factory to Rider

Saves $10 to $25 on the Ranger Bicycle you select from **44 Styles**, colors and sizes. Delivered free on approval *express* prepaid for **30 Days' Free Trial.**

$5 a Month if desired. Possession and use at once on our liberal Monthly payment plan. Bicycles **$21.50** and up.

Tires lamps, wheels, equipment at half usual prices. Write for marvelous new prices, wonderful 30-day trial offer and terms.

Mead CYCLE COMPANY DEPT. R 163 CHICAGO Write us today for free catalog

A B C OE POTATO CULTURE

BY A. I. ROOT.

This book was the product of the late A. I. Root's tremendous enthusiasm for potato culture. It has in it all the best that he knew of potato-raising and that was a great deal. Only 400 copies left. While they last, 35c for paper cover. 50c for cloth bound, postpaid. Address The A. I. Root Company, Medina, Ohio.

Pennsylvania Beekeepers

WE CARRY A LARGE STOCK OF ROOT QUALITY GOODS AND GIVE ROOT SERVICE. ORDER EARLY AND AVOID THE RUSH SEASON.

Reynoldsville Hardware Co.

REYNOLDSVILLE, PA.

PLANS FOR POULTRY HOUSES!

All style 150 Illustrations; secret of getting winter eggs, and copy of "The Full Egg Basket." Send 25 cents.
INLAND POULTRY JOURNAL Dept. 41 Indianapolis, Ind.

GOLDEN QUEENS AND THREE-BANDED BEES FOR 1924.

1 Untested Queen, $1.00; 1 Tested Queen, $1.50; 1 lb. package of bees, $2.00; 2-lb. package of bees, $3.00; 3-lb. package of bees, $4.50. Nucleus, per frame, $1.50; 1 additional pound of bees with nucleus, $1.00. No disease, safe arrival guaranteed; bees inspected.

J. W. SHERMAN, VALDOSTA, GEORGIA.

THREE-BANDED ITALIAN QUEENS

Bright leather-colored queens and bees reared in the heart of the famous Piedmont section of the South where natural conditions afford queens that do excel. Try my queens and tell your friends about them. One untested queen, $1.00; 6, $5.00; 12, $9.00. Tested queens, $1.50 each. Bees in 2-lb. packages, $3.00, without queen. All guaranteed to please or your mo ey back. Book your order now.
G. H. MERRILL APIARIES, Piedmont, S. C.

HUBAM

Ask for our prices and samples. Scott's Seed Book telling "How to Know Good Seed" is free
O. M. SCOTT & SONS COMPANY,
99 8th Street. Marysville, Ohio.

ROOT QUALITY BEEKEEPERS' SUPPLIES

My spring stock is in and I can give prompt shipment; do not wait until the bees need them and can not get them in time for the honey flow. Beeswax wanted.
A. M. MOORE, ZANESVILLE, OHIO.
20½ South Third Street.

New Catalog Ready
Beekeepers' Supplies

Root's Goods of High Quality. Three-ply foundation, standard stock of supplies kept on hand for prompt shipments. Send us your inquiries and orders early for quick action.

J. NEBEL & SON SUPPLY CO.
Montgomery County. High Hill, Mo

MASON BEE SUPPLY COMPANY,
Mechanic Falls, Maine.

From 1897 to 1923 the Northeastern Branch of The A. I. Root Company.
PROMPT AND EFFICIENT SERVICE.
Because—Only Root's Goods are sold.
It is a business with us—not a side line.
Eight mails daily—Two lines of railway.
If you have not received 1924 catalog send name at once.

NOTICE OF REMOVAL

On and after March 1st, I shall be located in my new warehouse at 237 Park St., Medford, where I shall continue to carry a full line of supplies for the beekeeper. 1924 catalog on request.

H. H. JEPSON
237 Park St. Medford, 55 Mass.
(Formerly at 182 Friend St., Boston.)

E. D. TOWNSEND wishes to announce that his summer address between the dates of June 1 and December 1 will be his old address, Northstar, Michigan, where the "Townsend Quality" extracted honey is produced, and from December 1 to June 1 to his winter home at Loreauville, La., where the "good queens" come from. Always address Northstar, Michigan, if in need of honey. For bees and queens, always address Loreauville, La. Address all complaints, if any, to my private address.

Root Quality Supplies

East St. Louis, Ill.
O. G. RAWSON, 3208 Forest Place.
Send for Catalog.
Authorized Distributor for St. Louis district.
BEES AND QUEENS.

Italian Queens

FOR APRIL DELIVERY.

Vigorous Three-bands or Goldens. Money back if not entirely satisfied; you to be the judge. 1 to 25, $1.00 each. Clipped when requested. No disease. Honest service assured.
CRENSHAW COUNTY APIARY.
Rutledge, Alabama, U. S. A.

4% BANKING BY MAIL

THE HOME OF THE HONEY-BEE

MANY PEOPLE,

although they live miles from Medina, avail themselves of the safety and the liberal interest—4%—which this institution assures for savings of $1.00 or more. Deposits welcomed by mail.

THE SAVINGS DEPOSIT BANK CO. MEDINA OHIO
A. T. SPITZER PRES. E. R. ROOT VICE PRES. E. B. SPITZER CASHIER

OUR THREE-BANDED BEES AND QUEENS ARE MONEY MAKERS TO YOU

Let us book your order now and we assure you that you will receive prompt service and entire satisfaction. Give our package bees and queens a trial and get the splendid results that others are getting. My customers are sending in splendid reports from them. Read what one says:

"Your queens are just wonderful. On a poor honey flow here this year my pound packages gave me 150 pounds of extracted honey each. I have never had pound packages do so well before, and I have had a lot sent up from the South."

We pay all transportation charges.
1-lb. packages with untested queens, $3.25 each
1½-lb. pack. with untested queens, $4.25 each
2-lb. packages with untested queens, $5.25 each
3-lb. packages with untested queens, $6.25 each

25 cents less per package on lots containing 10 or more packages. 50 cents less per package on lots containing 25 or more packages.

Select Untested Queens, $1.00 each; 10 or more, 90c each.

Select Tested Queens, $2.00 each; 10 or more, $1.75 each.

We guarantee safe arrival, prompt delivery and entire satisfaction.

HAYNEVILLE APIARY CO., HAYNEVILLE, ALA.

Let's Get Together

Last month we told you of the new shipping boxes that we are using to ship our combless packages in for the season of 1924, and we firmly believe that they are the best shipping package in existence today. This month we want to tell you a little about the quality of our bees and queens, and what you may expect if you favor us with your order. For example, the 4½-lb. package sent Mr. Barr, that was mentioned in last month's advertisement, was received by him on June 11, producing 130 pounds of surplus honey, leaving plenty for winter stores. The total labor by Mr. Barr amounted to 3½ hours. This can only mean good management by the buyer and the highest quality of bees and queens, and the most convenient shipping package in existence today. We could fill pages with similar testimonials, but space is too valuable. If you buy from us you may expect the following: One hundred cents of value for every dollar spent by you. Good, full weight packages, with 10% extra weight added to make up for shrinkage of bees on trip. Prompt shipment with full directions for handling bees and queens on arrival. We have never, in more than nine years of shipping bees, had to delay an order given us more than four days, then only on account of bad weather. We have never promised a customer bees and disappointed him by saying that we could not ship at all. Fair, courteous treatment to all. What more can you ask? Send for circular giving prices and detailed information of our bees and queens, and give us a trial if you want to do business with a firm giving a square deal.

Geo. A. Hummer & Sons, Prairie Point, Miss.

MIDDLE TENNESSEE BRED

Select Three-Band and Golden Italian Queens will please you. Place your orders now for May first deliveries.

—PRICES—

Untested—1, $1.25; 6, $7.00; 12, $14.00. Select Untested—1, $1.50; 6, $8.00; 12, $16.00. Select Tested—1, $2.50. 6, $12.00; 12, $22.00.
Write for descriptive circular and prices per hundred.

All correspondence will receive prompt and careful attention.

MIDDLE TENNESSEE APIARIES

HARDIN S. FOSTER, Manager.
COLUMBIA, TENNESSEE.

THIS SPRING, OUR 15th SUCCESSFUL YEAR,

in the package and queen business. Bees have wintered very well, so we are safe in advising the readers of Gleanings that we will have 5000 packages for this season's business. We were fortunate enough to start beekeeping 15 years ago with the famous three-banded stock, which we have worked up wonderfully in that time. We have good stock, good material and men that know the business from A to Z. Our packages are extra light in weight and strong. All bees move via express; queens if wanted are introduced laying en route as a whole. We ship on a standard frame brood and honey for bees in transit. NOTE this frame of natural food delivers bees in excellent shape, no matter where you are located. We want you to get good service. We mean to please you. Safe delivery guaranteed in U. S. and Canada. All dead bees promptly replaced. Government health certificate with each shipment. You are taking no chances. Order now and get your bees when you need them. The secret is to get them when promised. Will start shipping April 29.

Note Our Prices.

1 2-lb. on fr. brood and honey, no queen	$3.15
10 2-lb.	30.00
25 2-lb.	71.25
50 2-lb.	137.70
100 2-lb.	255.00

Additional pound of bees or frame of brood and honey, 75c each. 2-frame nuclei, same as 2-lb. packages.

Prices on Queens. Three-Banded Only.

1 Queen, $1.00; 10 Queens, $9.50; 25 Queens, $23.75; 50 Queens, $47.50; 100 Queens, $90.00.

OSCAR MAYEUX, HAMBURG, LA

Start Your Boy on the Road to True Manhood

Get **The Boys' Magazine** for him. He needs this great boys' periodical. Parents owe it to their sons to give them clean, interesting and instructive reading that will make them self-reliant, manly and courageous.

A SIX MONTHS' SUBSCRIPTION FOR ONLY 25 CENTS!

(This is ½ the regular price)

Each issue of **The Boys' Magazine** contains the very best stories by the world's best writers. Special departments devoted to Radio, Mechanics, Electricity, Athletics, Physical Training, Stamp Collecting, Amateur Photography, Cartooning, etc., etc. Beautiful big pages with handsome covers in colors. A big lot of jokes and comic drawings.

We give away $132.00 in Cash Prizes for the best amateur short stories, drawings, cartoons, articles on radio, mechanics, electricity, etc. There is no reason why YOUR boy should not win some of these cash prizes. These Prize Contests are continuous and each issue of **The Boys' Magazine** gives full particulars regarding them.

Just think of it! A SIX MONTHS' subscription for only 25 CENTS. It means six months of pleasure, entertainment and instruction for your boy, or for some boy in whom you take a particular interest.

Remit in stamps if more convenient.
(On sale at all newsstands, 10c a copy.)

THE SCOTT F. REDFIELD CO., Inc.
6254 Main St., Smethport, Pa.

I enclose 25 cents for a six months' subscription to THE BOYS' MAGAZINE as per your special half-price offer. Enter my subscription promptly and send me my first copy of THE BOYS' MAGAZINE by return mail. You agree to return my 25 cents at once should I not be more than pleased with THE BOYS' MAGAZINE.

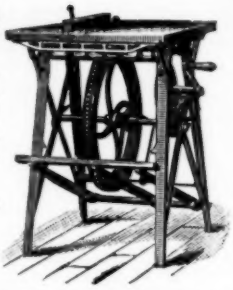
My Name is.....

My Address is.....

.....

(Please write plainly)

BARNES' HAND & FOOT POWER MACHINERY



This cut represents our combined circular saw which is made for beekeepers' use in the construction of their hives, sections, etc.

Machines on Trial.
Send for illustrated catalog and prices.

W.F. & John Barnes Co.
545 Ruby Street
ROCKFORD, ILL.

Three-Banded Italian Queens

Guaranteed to give satisfaction; if mismated, replace free of charge.

Untested Queens—1, $1.00; 12, $11.00; 100, $90.00. Select Untested—1, $1.20; 12, $13.00; 100, $100.00. Tested—$1.50. Breeders, $5.00.

H. L. MURRY, Soso, Miss.

PACKAGE BEES
One Dollar a Pound

QUEENS ONE DOLLAR ADDITIONAL.
3-Band and Leather-Colored Italians.

NUCLEI

2-FRAME STANDARD LANGSTROTH	**$3.00**
2-FRAME JUMBO LANGSTROTH	**3.50**
3-FRAME STANDARD LANGSTROTH	**3.50**
3-FRAME JUMBO LANGSTROTH	**4.00**

Send for Circular.

LOVEITT HONEY CO.

602 N. 9th Ave. **PHOENIX, ARIZ**

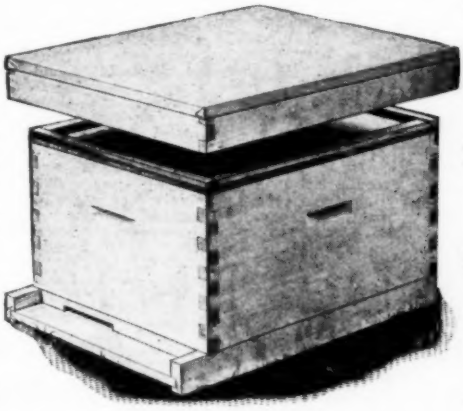
CARNIOLANS

are very gentle, very prolific, winter extra well, build up rapidly during the spring, and swarm no more than Italians if intelligently managed. Ask for my **FREE** paper, "**MERITS OF THE CARNIOLAN BEE**," describing Carniolans more fully, best methods of management for comb and extracted honey. The information in this paper will be helpful to you in making your plans for the coming season. **Later** we can supply queens and bees of our own strain of Carniolans—12 years' selection and breeding; **JAN STRGAR, CARNIOLA, EUROPE** strain. Strgar's bees have won 64 prizes in Europe. Breeders imported 1923. **ITALIAN**, Hamilton strain. The mother of this breeder made 577 finished sections of comb honey.

ALBERT G. HANN, Glen Gardner, N. J.

The Standard Hive of the World

The Hive with all the Important Features



One-story standard hive with metal cover.

THE STANDARD HIVE with a shallow super (the food chamber hive) makes the cheapest big hive on the market. The champion crop of honey in Indiana for 1923 was produced in the food chamber hive.

PROFITABLE SIZE
Not too heavy to be easily moved from one location to another. Returns big crops of honey. We recommend the 10-frame size.

FINE WORKMANSHIP
Made of the best lumber, air-dried, with close-fitting lock corners.

METAL ROOF COVER
Preferred by all experienced honey producers. Greatly improved. Will last a lifetime. A protection to the bees from the heat and cold.

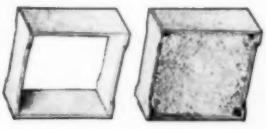
INNER COVER
Greatly improved this year. The best cover to be had by the beekeeper.

REVERSIBLE BOTTOM-BOARD
Made of cypress that lasts for years.

—o—

THE FINEST SECTIONS

We have the whitest and clearest basswood this year that we have ever had; the result is the best of all sections.



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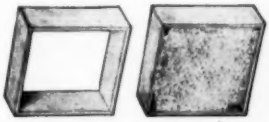

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THE A. I. ROOT COMPANY

WEST SIDE STATION MEDINA, OHIO

Achord's Bees and Queens for 1924

ORDER NOW FOR APRIL AND MAY DELIVERY AND RESERVE YOUR SHIPPING DATE.

Prices April 15 to May 15th, Express Collect.

2-lb. package with select untested queen.$ 4.50
Five 2-lb. pkgs., select untested queens. 21.25
Twenty-five 2-lb. pkgs., sel. unt queens.100.00

3-lb. pkg. with select untested queen...$ 5.50
Five 3-lb. pkgs., sel. untest. queens.... 26.25
Twenty-five 3-lb. pkgs., sel. unt. queens.125.00

QUEENS.

Select untested, $1.25 each; ten, $11.50; twenty-five, $25.00. Select tested queens, $2.00 each.

TERMS: 20 per cent with order to secure reserved shipping date. Balance just before shipment. Safe arrival guaranteed. No bee disease in this district. Inspection certificate with every shipment.
We have two of the largest, best equipped queen-rearing apiaries in the South, also a series of outyards of fine honey-producing three-banded Italian bees which we run exclusively for package bees. We can give you the very best in bees, queens and service.

W. D. Achord, Fitzpatrick, Ala.

It's the Queen That Counts With Your Package Bees

The success of your package bees depends upon the queen. G. A. Bailey, Geneseo, N. Y., reports one of our queens heads his best colony which stored 12 supers of clover honey. Peterson of Wisconsin, reports 325 lbs.

All of the queens with our package bees will be bred from the breeder that produces these queens. Thagard's Three-Bands, "Bred for Quality," are famous the world over for their gentleness and honey-producing qualities.

Select Untested Queens, 1 to 11, $1.00 each; 12 to 25, 85c each. 2-pound package with Select Untested Queen, $4.00; 25 up, $3.85. Get our prices on parcel post shipments.

THE V. R. THAGARD CO.
GREENVILLE -:- ALABAMA

Can Save You Money on
PACKAGE BEES
(With or without queens)
AND NUCLEI

Black bees, including Italian queens at following prices: 2-lb. package, $3.50; 3-lb., $4.00. 2-frame nucleus, $4.00; 3-frame, $4.50. 3 or 4 lbs. **(without queens), $1 per lb. Lots of 25 or more, deduct 50c each.**

I shipped L. C. Heckel, White Bear, Minn., 10 2-lb. packages last spring. On May 7th he wrote: "Received bees yesterday in good condition, possibly a handful dead in the whole 10. It was certainly well done. I want to thank you for your careful and punctual service. Will let you know later how bees have done, etc."

June 13th, just five weeks later (note that) he writes: "Bees are doing fine, nearly all working in the supers and not many black bees left."

You can't beat that much except with 3-lb. packages.

Bees shaken from above excluders; no drones and mostly young bees. No disease in this section. Satisfied everybody last year. Write for pamphlet with testimonials.

Terms: 20% with order, balance before shipping date. Ship from April 20th on.

A. J. HEARD
BONAIRE - - GEORGIA

Package Bees

VIGOROUS THREE-BANDED ITALIANS

You will get them on date you expect them. Two-pound package with untested queen, $3.25; 5 or more at $3.00 each. No disease, safe arrival and satisfaction guaranteed. Shipping starts April 15. Order with 10 per cent and date of shipping.

R. S. KNIGHT
R. F. D. 2. NEW ORLEANS, LA.

Caucasian Bees and Queens

After April 1st, I will offer some of my famous honey-gathering Caucasian stock of bees. This was the first stock imported into America, and has stood the test in commercial use. Three-frame nuclei with tested queen, $6.00. Tested queens, $2.00. Untested, $1.50.

DIXIE BEEKEEPER

All about Beekeeping in Dixie. Published monthly. $1.00 per year. Sample free.

WILDER'S CYPRESS HIVES

Are durable and satisfactory. A full line of beekeepers' supplies at low prices. Write for catalog.

J. J. WILDER, WAYCROSS, GA.

CHICAGO FOR QUALITY FOR SERVICE CHICAGO

When you get **ROOT QUALITY BEE SUPPLIES** from the greatest shipping center in America you get **SATISFACTION**. You get a superior grade of goods in **QUALITY** and **WORKMANSHIP**. Trains leave Chicago daily with connection for your station. Write for our new 1924 catalog. Let us quote you on your wants.

A. I. ROOT CO. OF CHICAGO

224-230 West Huron Street. *Chicago, Illinois*

Mr. Beekeeper

We have a large plant especially equipped to manufacture the supplies that you use. We guarantee all materials and workmanship. We ship anywhere. We allow early order discounts and make prompt shipments. **We pay the highest cash and trade prices for beeswax. Write for free illustrated catalog today.**

Leahy Mfg. Co., 95 Sixth St., Higginsville, Mo.

Texas Distributors—Albert M. Hunt & Sons, Goldthwaite, Texas.

Early Order Discounts

EVERYONE, including the beekeeper, is looking for a way to save money—this is one of them.

SECTIONS, SECTION HOLDERS, SEPARATORS, HOFFMAN BROOD FRAMES—ALL AT LIBERAL DISCOUNTS. Write in for quotations on the supplies you need for the 1924 season.

Orders forwarded immediately on receipt. Newly manufactured stock on hand with more in the process.

Charles Mondeng

146 Newton Ave. N. and
159 Cedar Lake Road.
MINNEAPOLIS, MINN.

TO NEW YORK STATE BEEKEEPERS:

Are the bees coming through the winter in good shape? We think so. Better prices were realized for 1923 crop than 1922, and the best part is the 1923 crop is about all sold or will be before the 1924 crop is harvested. Lucky the beekeeper who produces a good crop in 1924.

If you haven't before, use exclusively **ROOT QUALITY SUPPLIES** and **AIRCO** foundation this one season and just see how much it helps you to produce a better crop.

Be sure you get a copy of Root's catalog for 1924. It's a dandy.

Order early if you can, but no matter when you order we carry a good stock at all times, and don't wait until we are entirely out before ordering new stock. We give you the best service possible all the year round.

ROOT QUALITY SUPPLIES at factory prices and **NO EXTRA CHARGE FOR SERVICE.**

THE A. I. ROOT COMPANY OF SYRACUSE.

1631 West Genesee St., Syracuse, N. Y.
Phones: Office, Warren 0556J,
Residence, Warren 3287W.

SERVES YOU BEST.

60 BULBS With full details for planting and care $2

With Twelve Months' Subscription to

"THE FLOWER GROWER"

Unique Among Monthlies

The best horticultural magazine published-Burbank says so

Tells, first of all, how to grow flowers, but it does more than that, it teaches a sane and balanced outlook on life.

Departments for the Rose, Dahlia, Iris, Peony, Gladiolus, and other flowers; a Queries and Answers department; Sturtevant's Odds and Ends; The Glad Philosopher's Musings; Month by Month with the Flowers; Timely Suggestions; Our Birds; The Garden Club; Notes and News; and an Editorial Department, and an Editorial **policy** which is strangely lacking in most magazines.

Many items of interest to Nature lovers and students of the great out-of-doors and those who aspire to better living conditions and more beautiful surroundings.

Fifty-two to sixty-four pages, 9x12.

YEARLY SUBSCRIPTION PRICE $1 50

Special offer to readers of "Gleanings": 60 BLOOMING SIZE (SURE TO BLOOM) GLADIOLUS BULBS, grown in the Editor's own garden, postpaid, and a year's subscription, for $2.00 (check, money order, stamps or currency). Either bulbs or magazine alone easily worth the price at which both are furnished. By far the best value I have ever offered. You cannot fail with these bulbs.

Plant the bulbs; watch them bloom; read The Flower Grower; and see what happens.

Madison Cooper, Editor, 12 Court St., Calcium, N. Y.
Sample copy free if you mention "Gleanings."

Buy TREES and PLANTS With a GUARANTEE that *really means something*

A guarantee on nursery stock is a new idea—a safeguard to make *sure of what you buy.* Woodlawn Nurseries are not afraid to guarantee what they sell. We grow our own strongly-rooted, vigorous-growing, heavy-bearing trees and plants and honestly GUARANTEE them. The guarantee is plainly printed on and is a part of every order blank.

Our nursery has been celebrated for half a century for Fruit, Nut and Ornamental Trees, Shrubs, Roses, Bushes, Perennial Plants of honest worth.

We are introducers and have exclusive sale of the New Ohio Beauty Apple, a splendid Winter Apple, beautiful in appearance, of delicious flavor; a splendid shipper and heavy, regular bearer. Also the Dr. Worcester Peach. Beautiful, delicious, good shipper and keeper. Extra hardy. A most valuable commercial variety.

We sell to you direct—no commission to agents—you get the benefit in lower prices. Why take chances when you can get *insured* stock? Send for complete illustrated catalogue and growers guide, telling how to obtain best results and best stock at best prices. Write to-day, it is FREE.

WOODLAWN NURSERIES
859 Garson Avenue
Rochester, N. Y.

CONDON'S GIANT EVERBEARING TOMATO

"QUEEN OF THE MARKET." Big Money-Maker. Large, solid fruit; excellent canner. To introduce to you our Northern Grown Live Seeds and Plants, we will mail you 125 seeds of Condon's Giant Everbearing Tomato FREE and our Big 1924 Garden and Farm Guide, 192-Page Book, tells how, and what to plant. Prices lower than ever.

SEND POSTAL TODAY

CONDON BROS., Seedsmen
Rock River Valley Seed Farm
Box 91 ROCKFORD, ILLINOIS

EVERGREENS

Hill's Hardy Tested Sorts

Best for windbreaks, hedges and lawn planting. Protect buildings, crops, stock, gardens and orchards. Hill's Evergreens are nursery grown and hardy everywhere. Hill's Evergreen book sent free. Write today. Beautiful Evergreen Trees at moderate prices. World's largest growers. Est. 1855.

The D. Hill Nursery Co., Inc., Dundee, Ill.
Box 246. Evergreen Specialists.

GOOD SEEDS

Grown From Select Stock —None Better— 54 years selling good seeds to satisfied customers. Prices below all others. Extra lot free in all orders I fill. **Big free catalogue** has over 700 pictures of vegetables and flowers. Send your and neighbors' addresses.

R. H. SHUMWAY, Rockford, Ill.

STRAWBERRY PLANTS

$2.50 Per 1000, and up. Our strong, healthy, tremendous bearing plants guarantee big crops of luscious berries. Best varieties for all kinds of soils. Many new varieties such as **Eaton, Dunlap Special, Premier, Marvel** and **Cooper.** The world's greatest new Everbearing Strawberry CHAMPION. Full line of Raspberries, Blackberries and Asparagus.

GLADIOLI—ROSES—ORNAMENTALS

Greatly Reduced Prices. Large Stock of good **Grape Plants** at $30.00 per thousand. Beautiful new color catalog free. *Write Today.*

BRIDGMAN NURSERY CO., Box 89, Bridgman, Mich.

Livingston's Superb Spencer Sweet Peas

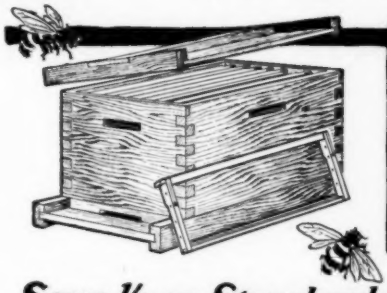
SEVEN beautiful varieties—best quality seeds—sure to grow. Collection includes lavender, purple, salmon, pink, maroon, scarlet and white. Seven of the most popular Spencer sorts. **Choice varieties, exquisite coloring.** 25 cents, postpaid. **25¢**

Livingston's Exhibition Aster Collection, 50c

THE finest collection of asters we have ever offered—early and late varieties. Seeds that **will grow strong, vigorous plants, with large, beautiful flowers,** perfect in form, dainty and rich in coloring. Well balanced collection—including seven different types in mixture put up in separate packets. Seeds of **true blue Livingston quality,** 50c postpaid. **50¢**

Handsomely illustrated 1924 Catalog free on request.

THE LIVINGSTON SEED CO.
194 East Chestnut St. Columbus, Ohio



HIVES
5 for $10.95
one story eight frame

Save ⅓ on Standard Hives

Ward's are standard hives, made of clear western pine, thoroughly kiln-dried, no knots. Made especially for us by one of the largest and best known manufacturers in the country. All parts accurately machined and close-fitting. Why pay more? Order your new hives direct from this advertisement. Catalogue number 187M5681—eight frame hives—price five for $10.95. Shipping weight 130 pounds.

We can start you in Bee-keeping

These hives are typical of Ward's Bee-Keepers' Supplies—low-priced but standard, serviceable supplies of every kind. We sell pure bred Italian Bees and Queens. Send for our General Catalogue No. 100 which shows our complete line of hives, sections, foundation, smokers, honey extractors, feeders—in fact, everything for amateur or professional bee keepers. Write to Dept. 4-14.

Ward's is headquarters for bee keepers' supplies.

MONTGOMERY WARD & CO.

Chicago Kansas City St. Paul
Portland, Ore. Ft. Worth Oakland, Cal.

FREE

Write for General Catalogue showing all standard Supplies for Bee Keepers at lowest prices.

64 BREEDS Most Profitable chickens, ducks, turkeys and geese. Choice, pure-bred northern raised. Fowls, eggs and incubators at low prices. *America's great poultry farm.* At it 31 years. Valuable 100-page book and catalog free.
R. F. NEUBERT Co., Box 884, Mankato, Minn

ALUMINUM CHICK FEEDER for FEED, GRIT, MILK or WATER. Simple, safe and sanitary. Chicks cannot get feet into contents. Send 30c cash or stamps for one postpaid. Money back if not satisfied. **30c**
American Poultry Journal, 460-523 Plymouth Ct., Chicago

World's Best Roofing at Factory Prices

"Reo" Cluster Metal Shingles, V-Crimp, Corrugated, Standing Seam, Painted or Galvanized Roofings, Sidings, Wallboard, Paints, etc., direct to you at Rock-Bottom Factory Prices. Save money—get better quality and lasting satisfaction.

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have great durability—many customers report 15 and 20 years' service. Guaranteed fire and lightning proof.

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Get our wonderfully low prices and free samples. We sell direct to you and save you all in-between dealer's profits. Ask for Book No 183

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Lowest prices on Ready-Made Fire-Proof Steel Garages. Set up any place. Send postal for Garage Book, showing styles.
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AMAZING New STRAWBERRY Book

Sent Free Here is the most wonderful book on Strawberries ever published. Written by the world's greatest strawberry expert. Gives his secrets for growing the big crops of fancy strawberries that won him fame and fortune. It pictures and describes 18 of the best standard varieties and three of the world's greatest Everbearers which produce big crops of delicious berries from early summer until snow flies.

Read how Geo. Beaudette of Michigan made $1800.00 from one acre of Kellogg Strawberries and how a school girl in New York state made $140.00 cash profit from her Kellogg Garden.

Send for this book right now and learn how to grow Kellogg Strawberries "The Kellogg Way" and turn your garden or backyard into a "Strawberry Gold Mine."

Just send your name and address on a postcard or in a letter—that's all. The book is Free.

R. M. Kellogg Co.
Box 2610
Three Rivers, Mich.

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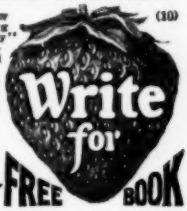


SEASON CF 1924

THE SOUTHERN BEE FARMS APIARIES

The Home of the Good Italian Queen.

MARKSVILLE, LA.

Will be ready for shipment May 5.

PRICES

QUEENS—THREE-BANDED ITALIANS

1 mated, untested, $1.00; 6 mated, untested, $5.50; 12 to 25, at 85c each; 25 to 100 at 75c each.

PACKAGE BEES

One package with queen, 2 lbs., $3.00; one package with queen, 3 lbs., $4.00; one package with queen, 4 lbs., $5.00.

Large orders for queens or packages will be given special attention.

Terms: 25 per cent with order, balance 20 days before shipment. Address

JOHN ST. ROMAIN
MARKSVILLE, LA.

"WHY GOOD QUEENS PAY"

Because they lay more eggs than poor ones. No one expects a weak colony to gather as much honey as a strong one, and you are sure to have weak ones unless you have good young queens in them. Good queens are worth more to a beekeeper than any other investment he can make.

We have made queen-rearing a life study and use only the best methods in rearing our queens. Our breeding stock is carefully selected. We guarantee perfect satisfaction or money refunded.

THREE-BANDED OR GOLDEN QUEENS AFTER APRIL 1.

Select Untested—1 Queen, $1.20; 12 Queens, $11.00; 100 Queens, $85.00.

Untested—1 Queen, $1.00; 12 Queens, $10.00; 100 Queens, $75.00.

Tested—1 Queen, $1.50; 12 Queens, $17.00. Breeders, $5.00 to $25.00 each.

Golden Queens are reared five miles from other breeding yards. Package bees, nuclei, or full colonies quoted on request. Let us book your order early. Only 10 per cent required; balance before shipment.

CITRONELLE APIARIES
CITRONELLE, ALABAMA.

QUEENS, $1.00

Mr. Beekeeper, if you want the very best queens and bees with prompt, efficient service at prices that you can afford to pay, order NORMAN BROS. queens and bees. Our queens and bees' service and prices meet these requirements. Mr. Beekeeper, when you introduce NORMAN BROS. queens you can feel assured you have a queen that is beautiful and will do her duty, and as good as any in the U. S. A., which is backed by years of improving and selecting from the finest mothers and mated to drones that are selected. Our bees are hardy, prolific, disease-resisting and honey-gatherers. Orders booked with one-fourth down, balance before shipment is desired. Place your order with us. We ship when you want them.

PRICES FROM APRIL 1st TO JUNE 1st.

Untested: 1, $1.00; 6, $5.50; 12, $10.00; 100, $72.00. Select Untested: 1, $1.20; 6, $6.50; 12, $12.00; 100, $90.00. Tested Queens: 1, $2.00; 6, $11.00; 12, $21.00. Sel. Tested, $2.50 each. One 2-lb. package bees with select untested queen, $4.00 each; 12 or more, $3.80 each. One 3-lb. package with select untested queen, $5.50 each; 12 or more, $5.20 each. GUARANTEE—We guarantee pure mating, safe arrival and satisfaction in U. S. A. and Canada.

NORMAN BROS. APIARIES, Naftel, Ala.

YOU BUY ? *BEES AND QUEENS* IN ONE OF TWO WAYS

On Trust or On Certainty 4-hands

You either know you are going to get good queens and bees or you hope you are.

Hope may result in poor stock, delay, loss of colony and no honey. Knowledge means first-class stock, prompt delivery, courteous treatment, satisfaction and profit.

When you mail your order to FOREHAND you know you are buying QUEENS AND BEES on certainty. How about your next order?

Untested queens, 1 to 12, $1.00 each; 12 to 25, 85c each. One lb. bees with queen, $3.25; two lbs. bees with queen, $5.25; three lbs. bees with queen, $6.25; 10 or more packages of either, 25c less per package. POSTAGE PAID ON BEES AND QUEENS. Satisfaction and safe delivery guaranteed. REMEMBER THE PRICE IS PREPAID ON PACKAGE BEES. Write for prices on large lots.

N. FOREHAND -:- GONZALEZ, FLORIDA

Townsend's Bulletin No. 11

Let me talk about Queens! Untested three-banded Italian queens, the old reliable, the kind that brings in the honey. There are a lot of my friends who are in need of good, reliable untested queens that I cannot supply in my little yards of thoroughbreds, so the very best I could think of to accommodate my customers was to make arrangements with a very reliable queen breeder in Alabama to rear me several thousand untested queens from a breeder that I'm to furnish from the SHAW "line-bred" stock. Of course, they will be mated with his own three-banded drones, but I think I can promise you something good from this lot of untested queens. A nice part of it is that I can surprise you in a price on those queens when bought in quantities of not less than 25 at a mailing. Be sure to get my very low wholesale price on those fine queens before you buy. You will be well pleased with the price I can quote you on these queens. There is still a good stock of the SHAW "line-bred" breeding queens left for May delivery, and the price is the same as last month, i. e.:

XXXVery sel. for breeding purposes.$10.00 ea.
XXSelect for breeding purposes.... 9.00 ea.
XVery select tested ..... 3.00 ea.

Mailed in large export cages. Safe delivery guaranteed.

Package Bees with Queens.

Package bees are worth much more shipped on a regular L. comb of hatching bees and honey to last them during transit than by any other mode of delivery. Safe delivery guaranteed. Health certificate with each shipment. I do not buy bees of any breeder who ever had disease in his yards. I quote as follows for April 20 to May 31 delivery:

25 2-lb. pkgs. with untested queens for $92.50
50 2-lb. pkgs. with untested queens for 172.50
100 2-lb. pkgs. with untested queens for 320.00

25 3-lb. pkgs. with untested queens for 115.00
50 3-lb. pkgs. with untested queens for 217.50
100 3-lb. pkgs. with untested queens for 410.00

25 4-lb. pkgs. with untested queens for 137.50
50 4-lb. pkgs. with untested queens for 262.50
100 4-lb. pkgs. with untested queens for 500.00

Send part payment on bees with order, balance when wanted shipped.

Address with remittance E. D. Townsend, successor to J. W. K. SHAW & CO., Loreauville, La.

FARM WAGONS

High or low wheels—steel or wood—wide or narrow tires. Steel or wood wheels to fit any running gear. Wagon parts of all kinds. Write today for free catalog illustrated in colors.

ELECTRIC WHEEL CO., 23 Elm Street, Quincy, Ill.

RIGHT ON THE JOB

Contemplate your needs. INVESTIGATE US. DECIDE TO ORDER EARLY. Many customers are writing us that they are glad to know we are going to supply them again with bees and queens. More than that, we are prepared to take care of more business than formerly.

The combless package we will use this year has long since passed the experimental stage. Used by largest shippers and has stood the test of time. It embodies all desirable features.

We have a good stock of Pure Three-Band Italians. Selective breeding, with due attention paid to drones as well as breeding queens, assures you of satisfaction.

A two-frame nucleus and young queen already introduced, $4.25.

A two-pound package with untested queen, $4.25.

A three-frame nucleus and young queen introduced, $5.25.

A three-pound package with untested queen, $5.25.

ORDER 12 OR MORE PACKAGES OR NUCLEI AND DEDUCT 25c EACH.

QUEENS: Untested, $1.00 each; $11.00 per doz; $80.00 per 100.

Select Untested, $1.20 each; $13.00 per doz. Tested, $1.50 each. Breeders, $5.00. We guarantee pure mating of queens, safe arrival and free from disease.

Yours for a square deal,

JENSEN'S APIARIES
CRAWFORD, MISS.

THRIFTINESS

is the quality that makes Forehand's Three Bands **surpassed by none but superior to many.** Thirty-two years of careful breeding put thriftiness in our bees.

Place your order now for spring delivery. Only 10 per cent required with order. Our usual guarantee on bees and queens.

POUND BEES: Write us your requirements and we will quote you our very attractive prices. Parcel post and express shipments.

QUEENS: Untested, 1 to 11, $1.00; 12 to 25, 85c; 25 to 50, 80c. Select Untested: 1 to 11, $1.25; 12 to 25, $1.00.

Let us send you a copy of our booklet, "How to Increase Profits in 1924."

W. J. FOREHAND & SONS
FORT DEPOSIT, ALABAMA.

1924 Nuclei With One Extra Pound Bees 1924

We are now booking orders for 1924 delivery. After several years' experience in shipping different sizes of nuclei and pound packages to nearly all parts of U. S. and Canada we have found the regular three-fr. size with one extra pound of bees to be the correct size to insure the purchaser a surplus crop of honey, provided the bees are received before May 15.

Over 1500 colonies will be operated for the sale of nuclei. Booking capacity 2000 nuclei. For those who have become disappointed in results obtained from buying bees in package form, I would like to urge the purchase of some of our large three-frame nuclei with the extra pound of bees. Safe arrival and satisfaction guaranteed. Bees are absolutely free from contagious diseases. Bees will be shipped on combs built from full sheets of foundation nearly all brood capped. Send for circular telling more about our nuclei. Terms, 20 per cent with order, to guarantee acceptance. Balance before shipment.

"The bees arrived yesterday and they were the finest lot of bees I ever looked at. Not one comb broken."—Dr. Chas. S. Chadwick, Jackson, Mich.

"I am more than pleased with the 50 nuclei you sent me last year. Book my order for 50 more."—Robt. Hunter, St. Etienne de Beauchamois, Quebec.

"I am much pleased with your stock and have recommended your bees to a number of beekeepers."—Otto W. Gall, Inspector of Apiaries, Binghamton, N. Y.

"Some of the nuclei you sent me have made 80 pounds surplus already."—Maurice Geary, Ironwood, Mich.

"The bees I received June 1st have made me nearly one super of surplus. The above speaks well for the extra bees."—Omar C. Curtis, Escanaba National Bank, Escanaba, Mich.

3-frame nuclei of Italian Bees and Queens	$5.00 each
25 lots or more	4.75 each
50 lots	4.50 each
100 lots	4.25 each
Queens, untested, $1.00 each, or	10.00 doz.

Write for prices for carload lots of full colonies in ten-frame hives, delivered.

ROOT QUALITY BEE SUPPLIES

A. R. IRISH, Box 134, Savannah, Ga.

Knight Pays the Transportation Charges on Package Bees

An item not to be ignored. Shipments via parcel post. They go through quicker.

100 nuclei, sent a party in Michigan last spring, averaged 263 pounds surplus honey. More than 400 per cent profit. Will give you his name and address upon request. Nothing but high-quality queens, breeders being selected for years from high honey-gathering colonies, can produce such high averages. No one, expecting to receive it, would give a dime for a poor queen.

PRICES TO JUNE 1.

1-pound package, including select untested queen	$3.25
2-pound package, including select untested queen	5.25
3-pound package, including select untested queen	6.25
10 or more packages, either size	25c per package less

THREE-BANDED LEATHER-COLORED ITALIAN QUEENS.

1 select (one grade) untested queen	$ 1.25
5 select (one grade) untested queens	5.50
10 select (one grade) untested queens	10.00
Select tested queens, each	2.00

Safe arrival of bees and queens, pure mating and perfect satisfaction guaranteed. Furthermore, I make good my guarantee. 10 per cent cash books your order. Will ship on the day you name, having the bees, men and equipment to handle all orders promptly. Should you find a queenless colony this spring send to me for a queen to save them. I will not disappoint you. No disease.

JASPER KNIGHT, HAYNEVILLE, ALABAMA.

Good Combs

Most beekeepers realize that a well-designed frame and a good grade of foundation are among the requisites for producing a good drawn comb. Few, however, apparently realize the importance of **GOOD WIRE**—wire which will neither **stretch** nor easily **break** as it is being drawn taut in the frame.

In this, we believe we are taking the lead in announcing a **BETTER GRADE OF FRAME WIRE** at no advance in price.

To bee comb foundation the wires serve as reinforcement just as steel is used to reinforce concrete. To the frame the horizontal wires serve as a "tie," just as steel cables serve as a "tie" on a bridge. By reinforcing the foundation and by tying the frame, the ultimate drawn comb will be **reinforced** and **tied.**

METAL EYELETS may be used to advantage to prevent slackening of the wires due to cutting into the end-bars of the frame. Metal eyelets also materially increase the speed of wiring by greatly reducing the heavy "drag" when pulling the wires through non-eyeleted end-bars. You put them into the end-bars yourself.

"SUPERIOR" FRAMES "SUPERIOR" FOUNDATION "SUPERIOR" METAL EYELETS "SUPERIOR" FRAME WIRE	A COMPLETE "SUPERIOR" UNIT	A FINISHED DRAWN COMB

NO SAGGING NO WARPING
NO ADULTERATED WAX NO GNAWING ALONG THE WIRES

For prices and further information write

Superior Honey Company

Idaho Falls, Idaho — *Ogden, Utah* — *Riverside, Calif.*

PURE THREE-BAND ITALIANS

MY QUEENS GIVE SERVICE.

Untested, $1.00 each; $90.00 per 100. 1924 Tested, $2.00 each.
Only good queens are shipped. No disease in my yards.

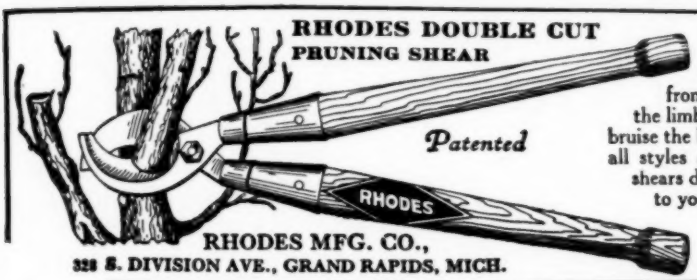
D. W. HOWELL, SHELLMAN, GEORGIA

GOLDEN ITALIAN QUEENS

BRED FOR BUSINESS

Only one grade select. Safe arrival and satisfaction guaranteed.
Untested, 1, $1.25; 12, $12.00. Tested, $2.50 each.
1-lb. pkg. of bees and untested queens, $3.00; 2 lbs., $5.00. All mail charges paid.

E. A. SIMMONS - - GREENVILLE, ALABAMA.



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Patented

THE only pruner made that cuts from both sides of the limb and does not bruise the bark. Made in all styles and sizes. All shears delivered free to your door. Write for circular and prices.

RHODES MFG. CO.,
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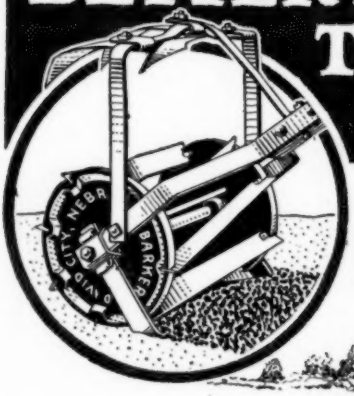
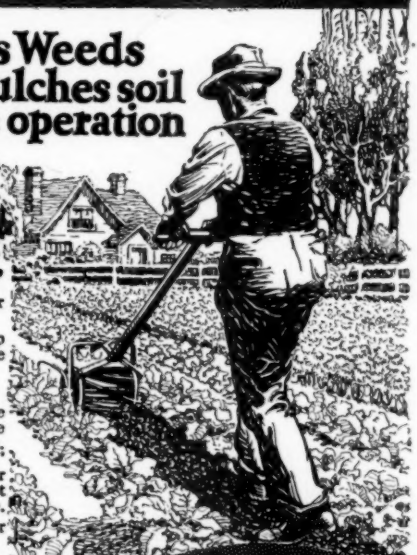
BETTER AND FASTER THAN 10 MEN WITH HOES



Kills Weeds & Mulches soil -one operation



"Finest Machine for Garden Work" say experiment station men and thousands of other users.

Every experienced gardener knows that he must keep the weeds out and the surface mulched to hold the moisture at the plant roots.

BARKER Weeder, Mulcher and Cultivator

Eight blades revolving against the underground knife destroy the weeds and in the same operation chop the clods and crusted surface into a level, porous mulch. Intensive cultivation. "Best Weed Killer Ever Used." Cuts runners. A boy can work it and do more and better work than ten men with hoes. Has guards to protect the leaves; shovels for deeper cultivation. Inexpensive.

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FREE BOOK by practical garden men. Tells how to get the best results, save time, eliminate hard work; illustrates the Barker and its work, tells what leading gardeners say about it, gives prices delivered, etc. A postcard to us brings it and our Factory-to-User Offer, or fill out the coupon below and mail it today.

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Putnam Brooder Heater
$4.75 postpaid

Total Cost, including Brooder Heater, $4.96

"I have 200 little chicks which we raised with the Putnam Home-made Brooder, and they seem to be doing fine. I have not lost one yet," writes Mrs. C. W. Bennett, Fulton, N. Y.

You can make a better brooder than you can buy. A 14-year old boy can do it in an hour with a saw and hammer. Your brooder complete with Putnam Brooder Heater need not cost you more than $4.96.

This home-made brooder will care for from 25 to 60 chicks. You can make as many brooders as your plant demands. Naturally chicks do better in small flocks.

How to Order:—I sell the Putnam Brooder Heater only. The other materials you can secure at your dealer for less than 25c. The price of my Brooder Heater is $4.75. With every Brooder Heater I send easy-to-follow directions for making the Home-made Brooder. Your dealer should have the Putnam Brooder Heater in stock. Ask him for it. If he doesn't have it, send me $4.75, check or money order; I will ship you at once, postpaid. In ordering, please state your dealer's name.

GUARANTEE:—I guarantee the Putnam Brooder Heater to give satisfaction or it may be returned in good order within thirty days, and the money paid for it will be refunded.

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Cultivated Whitesbog Blueberries

a popular and profitable fruit

Pure-bred Whitesbog Blueberries average well over one-half inch in size. Delicious, practically seedless. Have excellent shipping qualities. Command highest market prices. Bushes are vigorous, heavily productive. Every variety tested and named. Easy to pick, easy to cultivate, hardy, long-lived.

Early bee pasture. No spraying—no danger from spray poison.

Send for new circular illustrated in colors, giving full particulars on varieties and cultivation. Attractive price offers to commercial growers.

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Headquarters for Pure-Bred Blueberry Plants
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PREPARE FOR SPRING BUSINESS

GLASS and TIN HONEY CONTAINERS	2½-lb. cans, in crates of 100	$4.00 a crate
	5-lb. pails, in crates of 100	7.00 a crate
	10-lb. pails, in crates of 50	5.25 a crate
	60-lb. tins, used, good condition, 2 tins per case	.25 a case
	60-lb. tins, new, 2 tins per case	1.00 a case
GLASS JARS WITH GOLD-LACQUERED, WAX-LINED SCREW CAPS	8-oz. honey capacity, 3 dozen per carton	$1.50 per carton
	16-oz. honey capacity, 2 dozen per carton	$1.30 per carton
	3-lb. or quart capacity, 1 dozen per carton	$1.00 per carton
HONEY	White Clover Crystallized in 60-lb. tins	$0.13 per lb.
	L. A. Clover Crystallized in 60-lb. tins	.12 per lb.

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Root's Goods at factory prices with WEBER'S service. Send us a list of your wants and we will quote you prices that will save you money.

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THAT *Are Made to* SATISFY

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Special prices to Beekeepers' Associations.

Write for our new 1924 catalog.

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REEDSVILLE, WISCONSIN.

Bee Supplies

We carry a full line of supplies that are needed in a modern apiary. The best that money can buy. Give us an opportunity to submit our prices to you before placing your order for next season.

Send us your name and address, and we will mail you a copy of our new catalog, which will be ready for mailing January First.

August Lotz Company

Boyd, Wisconsin.

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HONEY MARKETS

U. S. GOVERNMENT MARKET REPORTS.

Information from Producing Areas (first half of March).

CALIFORNIA POINTS: Southern California.—A little rain fell the first of the month, but much more is needed if a good honey crop is to be assured. Strong colonies will store some nectar soon from oranges, but colonies generally not strong enough to take full advantage of the honey flow. Losses from 50 to 70 per cent reported. Bees working some on pussy willow and fruit bloom. In the Imperial Valley the outlook is reported good, and considerable alfalfa and cantaloupes are being planted. Few single 60s light amber alfalfa in the Imperial Valley sold for 10c per lb. An offer of 12¼c per lb. reported made for several tons of 1922 orange honey. Considerable honey shipped in from Idaho to supply local demand. Northern California.—Plants in fair condition. Some rain has fallen, but more needed to insure a good thistle crop. Colonies in very good condition. Amount of disease reported about same as a year ago. Some white star thistle still on hand; beekeepers generally holding for 10c per lb. in large lots. Few sales reported, in ton lots 9-10c, single 60s 12c per lb. Beeswax, country-run, 22-23c per lb. cash, 23-24c per lb. in trade.

PACIFIC NORTHWEST. — Owing to very mild winter, bees have wintered well that had ample stores. Crop prospects good. Considerable honey still in hands of carlot producers who are holding for 10c per lb. or more in large lots. Few sales in 60-lb. cans reported at 12½c per lb.; 10-lb. pails, 14c; wholesale, 11c per lb. Average beeswax, 25-27c per lb.

INTERMOUNTAIN REGION. — Recent storms interfered with flights, which had been frequent due to mild weather although nights often cold. First pollen from maple in Idaho reported early as February 23. Considerable brood-rearing going on, which is likely to make much feeding necessary. More snow or rain needed in Utah if acute water shortage next summer is not to result. Idaho and Montana, on other hand, report ample moisture. Carlot inquiries and demand have shown an improvement, and numerous cars extracted white sweet clover and alfalfa have sold at 9-10c per lb., with some large beekeepers holding carlots light amber for 9c per lb. Ton lots white have sold at 8-11c, some 12c per lb., single 60s 12c, and 10-lb. pails, wholesale, 11½-14c per lb. Comb honey nearly exhausted. One car white, mostly No. 1, sold at $4.40 per case. Beeswax, average yellow, brought 23c per lb.

ARIZONA POINTS.—Desert flowers in bloom and bees are brooding heavily. A considerable acreage of alfalfa reported plowed up for cotton. A little swarming reported already in neglected yards.

TEXAS POINTS.—Recent cold spell has given bees a setback of undetermined extent. Fruit and forest trees and wild flowers were blooming and bees had been gathering plenty of pollen. Some surplus stored, and where nectar sufficient beekeepers have stopped feeding. Mesquite budding. Queen-rearing under way. Few 60s light amber extracted quoted at 13c per lb., small pails 15-16c per lb. Few sales beeswax reported at 23c cash or 25c in trade.

PLAINS AREA.—Weather continues cold, but bees have had several good flights and seem to be coming along fairly well. Colonies very light in stores. Crop outlook fair to good. One carlot extracted white clover reported sold at 10c per lb.; ton lots 10-12c, single 60s, 13-16c per lb.; ton lots light amber extracted, 9c. Beeswax has brought the producer 25-28c per lb.

EAST CENTRAL AND NORTH CENTRAL STATES.—Milder weather has permitted flights in most sections. Condition of colonies variable. Generally good where stores were ample, but some reported not wintering so well as last year. Clover plants well protected by snow, and crop outlook is generally good. Demand better than earlier in season and honey gradually cleaning up. Two carlots white extracted reported sold at 10c per lb., ton lots 10-12c, single 60s 13-17c, mostly 13-14c, small pails wholesale 13⅔-16c per lb. No. 1 white comb has sold lightly at $5.00-5.75 per case. The publicity given honey as an anti-freeze solution for automobile radiators is said to have increased its demand for human consumption.

NORTHEASTERN STATES.—Bees in cellars are reported wintering well; those outside have had occasional flights, and where stores were ample have wintered fairly well. Clover now mostly protected by snow, and crop outlook is fair. All reports are to the effect that honey is cleaning up well, and comparatively little remains in beekeepers' hands. One carlot sale reported white clover 10½c, buckwheat 9c per lb.; ton lots, clover 10-11c, buckwheat 8-8½c; single 60s, clover, 12-15c; buckwheat, 10c; small pails, clover, 12-17c; buckwheat, 11c per lb. No. 1 and fancy white comb have sold in small lots at $4.00-5.40 per case, mostly $4.50-5.00. Buckwheat, $3.40 per case.

SOUTHEASTERN STATES.—Recent cold weather has checked brood and queen rearing, and the season in nearly all sections is far behind normal. Bees in Louisiana are in fine condition, are storing large quantities of willow honey, and are working also on maple and fruit bloom. Heavy honey flow from white clover looked for before last of month. Prospects not so bright in Mississippi, but good demand reported for package bees. In Georgia bees are working on early peach and plum bloom, are gaining in brood, and titi should be yielding in a few days. Queen orders reported good. Sales of beeswax reported at 20c per lb. North Carolina reports hives full of bees and prospects bright for 1924. Cool, cloudy weather has kept bees in Florida from doing anything for the past 10 days. Palmetto outlook good in that state. Amber extracted has sold in barrels at 6-8c per lb., light amber at 8-10c per lb.

CUBA.—The equivalent of more than 4 cars of amber honey in barrels has recently been shipped to Holland at 85c per gallon, including cost and freight.

Telegraphic Reports from Important Markets.

BOSTON.—Since last report 20 bbls. Porto Rico arrived. Extracted: Demand moderate, market steady to firm on good stock. Sales to confectioners and wholesale grocers, per lb., Porto Rico, light amber 10c; dark, 9-9½c; Hawaii, white, 10-11½c; California, light amber sage, 13-14c, few sales fancy high as 16c; white orange, demand poor, 16c.

CHICAGO.—Since last report 3,800 lbs. Montana, 1,100 lbs. Wisconsin and 4,500 lbs. Wyoming arrived. Extracted: Demand slow, market steady. Sales to bottlers and confectioners, per lb., Wisconsin, Illinois and Iowa, white clover and alfalfa, 10½-11c; light amber, 9½-10c; dark mixed flowers, 8-8½c. Comb: Demand slow, market barely steady. Sales to retailers, Wyoming and Montana, double-deck cases white sweet clover and alfalfa and Wisconsin and Illinois, flat cases white clover fancy, $4.75-5.00; choice, $4.25-4.50; dark, $3.00-3.50. Beeswax: Movement moderate, market firmer. Wisconsin, Illinois and Iowa, bright, pure, 28-30c; medium, dark, 25-27c per lb.

NEW YORK.—Extracted: Since last report 58 bbls. Porto Rico (equivalent 1 car) arrived. Domestic receipts limited. Demand moderate, market steady. Sales to jobbers, wholesalers, confectioners, bakers and bottlers, per lb., New York, white clover, 12-12½c; buckwheat, 9½-10½c. Intermountain, white sweet clover, 12-12½c. Porto Rico, market firm, 88-90c per gal. Comb: Eastern, 24-section cases white clover, fancy and No. 1, $5.50-6.00; No. 2, $4.50-5.00. Beeswax: Since last report 85

(Continued on page 257.)

Monthly Report of Bees, Plants, Honey Prices, etc., from Actual Honey Producers.

Early in March we sent to actual honey producers the following questions:

1. What portion (if any) of the 1923 crop is still in the hands of beekeepers in your locality? Give answer in per cent.
2. At what prices has honey been sold (if any) in large lots (carload or less) in your locality during the past month? (a) Extracted honey per pound? (b) Comb honey, fancy and No. 1, per case?
3. What are prices when sold to grocers in case lots? (a) Extracted honey in 5-lb. pails, or other retail packages in terms of 5-lb. pails? (b) Comb honey, fancy and No. 1 per case?
4. What is the retail price to consumers in your locality? (a) Extracted honey in 5-lb. pails, or other retail packages in terms of 5-lb. pails? (b) Comb honey per section?
5. How is honey now moving on the market in your locality? Give answer in one word, as slow, fair or rapid.
6. What is the per cent of winter loss, if any, to date?
7. What is the condition of the colonies at present compared with normal? (a) As to strength? (b) As to amount of stores.
8. What is the condition of the honey plants at this time compared with normal? Give answer in per cent.

The answers, as returned by our bee and honey reporters, are as follows:

State.	Reported by:	Pct. Unsold.	Whole. Ex.	In small lots. Ex.	In small lots. Comb.	Retail prices. Ex.	Retail prices. Comb.	Movement.	Pct. Loss.	Condition. Bees.	Condition. Stores.	Plant Con.
Ala.	J. M. Cutts	..	..	..	..	..	..	..	2	75	50	80
Ark.	J. Johnson	0	..	$1.00	..	$1.25	..	..	10	50	75	75
Ark.	J. V. Ormond	..	..	..	..	..	..	..	..	..	..	..
B.C.	W. J. Sheppard	5	..	1.25	..	1.50	..	Fair	0	100	150	100
Cal.	M. H. Mendleson	0	..	..	..	1.10	$.35	Slow	5	75	50	10
Cal.	L. L. Andrews	..	..	..	..	..	..	..	..	..	..	..
Cal.	M. A. Saylor	2	$.10	.75	$4.80	1.00	.25	Fair	45	50	40	25
Cal.	M. C. Richter	10	..	..	..	1.50	..	Fair	10	100	100	100
Col.	J. A. Green	15	.09	.70	..	.85	.25	Fair	20	100	60	90
Col.	B. W. Hopper	..	..	..	..	..	..	..	10	100	90	100
Conn.	A. Latham	15	..	1.00	6.30	1.25	.35	Fair	1	100	100	110
Conn.	A. W. Yates	15	..	1.00	7.00	1.25	.40	Fair	0	100	100	100
Fla.	C. C. Cook	..	.08	.75	..	.95	..	Rapid	5	100	100	100
Fla.	H. Hewitt	0	..	.75	..	1.00	..	Fair	0	100	100	1
Ga.	J. J. Wilder	0	..	..	..	..	..	..	10	100	90	100
Ill.	C. F. Bender	0	..	..	5.50	..	.30	Slow	15	80	75	60
Ill.	A. L. Kildow	20	..	..	..	.75	.25	Fair	0	100	100	60
Ind.	J. Smith	0	..	..	..	1.25	.35	Fair	25	..	..	125
Ind.	T. C. Johnson	..	..	.90	5.00	1.10	.30	Slow	2	100	75	100
Ind.	E. S. Miller	20	..	.80	5.75	1.00	.30	Fair	..	100	90	100
Ia.	E. G. Brown	10	..	1.00	5.00	1.25	.30	Fair	15	100	50	100
Ia.	F. Coverdale	0	..	..	4.75	..	..	Slow	5	80	70	100
Ia.	W. S. Pangburn	25	..	..	..	.92	.25	Slow	..	..	..	95
Kan.	J. A. Nininger	10	..	.75	5.75	.95	.30	Fair	5	90	80	90
Ky.	P. C. Ward	..	..	..	..	1.30	..	Slow	2	90	50	90
La.	E. C. Davis	0	..	.75	..	1.00	..	Fair	0	100	100	100
Me.	O. B. Griffin	12	..	..	6.75	1.35	.35	Slow	..	100	100	90
Md.	S. G. Crocker, Jr.	5	..	1.00	5.25	1.50	.35	Fair	7	90	80	90
Mass.	B. N. Gates	20	..	..	..	..	..	Good	..	..	..	..
Mich.	E. D. Townsend	20	..	..	..	..	..	Fair	..	..	..	100
Mich.	I. D. Bartlett	10	..	.75	5.00	1.00	.32	Fair	0	90	90	100
Mich.	B. F. Kindig	7	..	.85	..	1.00	.27	Slow	..	..	..	100
Mich.	F. Markham	15	.10½	.80	..	1.25	..	Rapid	0	75	100	100
Mo.	J. H. Fisbeck	..	..	1.00	..	1.25	..	Slow	..	..	..	100
Mo.	J. M. Romberger	0	..	.70	4.00	.90	.31	Fair	12	60	..	100
Mont.	R. A. Bray	25	.09½	.60	4.50	.80	.25	Fair	3	100	100	100
Nev.	T. V. Damon	0	..	.75	5.00	1.10	.30	Slow	10	80	80	100
N.Y.	G. B. Howe	..	..	.75	4.75	1.00	.27	Fair	..	100	..	..
N.Y.	F. W. Lesser	0	.10½	..	..	1.00	.30	Fair	..	..	90	100
N.Y.	R. B. Willson	5	.10	.80	5.15	1.15	.27	Slow	5	125	125	90
N.C.	C. S. Baumgarner	0	..	1.00	..	1.25	.30	Fair	0	100	100	100
Ohio.	F. Leininger	10	.11½	1.00	..	1.25	.35	Fair	0	90	90	100
Ohio.	J. F. Moore	5	..	.85	4.80	1.10	.30	Fair	..	..	..	90
Ohio.	R. D. Hiatt	15	..	1.00	6.00	1.40	.40	Fair	..	..	..	..
Okla.	C. F. Stiles	0	..	.85	6.25	1.15	.35	Slow	5	90	70	70
Okla.	J. Heueisen	0	..	..	..	1.25	.40	Fair	2	70	80	100
Ore.	H. A. Scullen	10	..	.85	..	1.00	.25	Fair	5	100	100	100
Ore.	E. J. Ladd	..	..	..	5.50	.87	.30	Slow	0	100	100	100
Pa.	H. Beaver	1	..	.75	..	90	..	Slow	..	..	..	..
Pa.	D. C. Gilham	25	..	1.05	7.20	1.40	.40	Fair	25	..	..	80
Tenn.	J. M. Buchanan	..	..	..	..	1.25	.35	Slow	..	90	75	90
Tex.	J. N. Mayes	0	..	..	..	..	..	..	6	75	60	100
Tex.	H. B. Parks	..	..	..	..	..	..	..	5	100	100	110
Utah.	M. A. Gill	..	..	.50	..	.62	.17	Slow	4	100	75	100
Utah.	N. E. Mills	2	.09¾	..	..	..	..	Fair	..	100	..	..
Va.	T. C. Asher	0	..	1.10	6.00	1.25	.30	Fair	2	95	95	90
Va.	L. N. Gravely	0	.15	1.00	5.75	1.25	.35	Fair	10	..	..	85
Vt.	J. E. Crane	20	..	1.00	6.50	1.25	.35	Slow	..	..	..	..
Wash.	W. L. Cox	35	..	.80	6.00	1.00	.40	Fair	2	100	75	100
Wash.	G. W. B. Saxton	75	.11	.65	4.80	.75	..	Slow	2	100	100	100
W.Va.	W. C. Griffith	0	..	1.00	6.50	1.25	.35	Slow	40	60	50	75
W.Va.	T. K. Massie	..	..	..	..	1.00	.37	Slow	15	90	60	95
Wis.	G. Ditmer	0	.10	..	..	.75	..	..	5	82	90	50
Wis.	E. Hassinger, Jr.	10	.11	.80	..	1.00	..	Fair	..	..	..	90
Wis.	H. F. Wilson	1	.11	..	6.50	1.15	.37	Rapid	..	100	100	90
Wis.	N. E. France	10	..	1.00	4.75	1.20	.24	Fair	..	..	..	100
Wyo.	C. H. Ranney	..	.09½	.62	..	.75	..	Fair	..	100	100	100
Wyo.	A. D. Brown	..	..	..	..	..	..	Slow	40	100	95	110

A SUPERIOR QUALITY AT LESS COST

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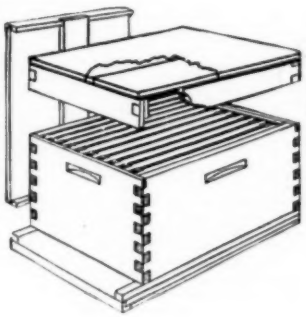
Special Prices

THE DIAMOND HIVE

Wood cover, reversible bottom-board, standard Hoffman self-spacing frames, 10-frame size, per crate of five (5) complete hives,

$12.00

per crate.



THE STIRLING HIVE

Metal cover, reversible bottom-board, standard Hoffman self-spacing frames, 10-frame size, per crate of five (5) complete hives,

$15.00

per crate.

STANDARD 10-FRAME HIVE BODIES with Hoffman self-spacing frames. Per crate of 5	$6.75
STANDARD 10-FRAME HIVE BODIES without frames. Per crate of 5	$4.00
JUMBO HIVE BODIES with frames. Per crate of 5	$8.00
COMB SUPERS, No. 1 style, 4¼ x 4¼ x 1⅞-inch, with section-holders, separators. Per crate of 5	$4.50
STANDARD HOFFMAN SELF-SPACING FRAMES. Per 100	$5.00

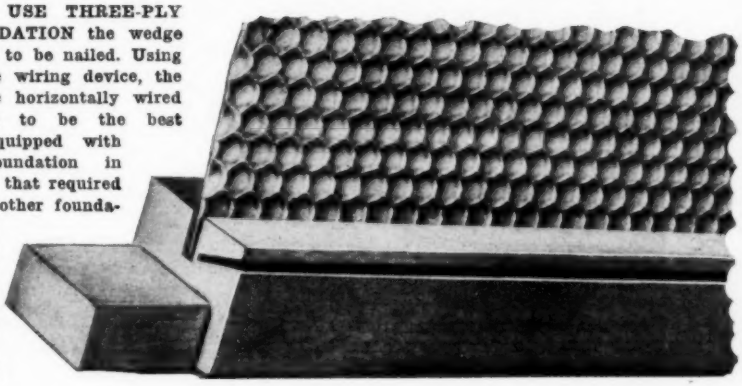
MEDIUM BROOD FOUNDATION.		THIN SUPER FOUNDATION.	
5-pound packages	60c per lb.	5-pound packages	65c per lb.
25 pounds or more	55c per lb.	25 pounds or more	60c per lb.

HOFFMAN & HAUCK, INC.

WOODHAVEN, NEW YORK, U. S. A.

How Time is Saved

WHEN YOU USE THREE-PLY AIRCO FOUNDATION the wedge does not have to be nailed. Using an inexpensive wiring device, the frames can be horizontally wired (acknowledged to be the best way) and equipped with Three-ply Foundation in less time than that required to fasten any other foundation into any other frame on the market. Just slip the foundation loosely into the groove. No need to nail the wedge!



THREE-PLY AIRCO FOUNDATION

MAKES PERMANENT PERFECT COMBS

No special frames. Fits all standard Hoffman and Jumbo frames. No slotted bottom-bars to nail. No nailing of wedge with 5 to 7 nails. Seven sheets to the pound.

THE A. I. ROOT COMPANY West Side Station **MEDINA, OHIO**

BEEKEEPERS

Virginia, North and South Carolina

IF YOU WANT THE BEST BEEKEEPERS' SUPPLIES BUY ROOT'S QUALITY. IF YOU WANT SERVICE ORDER FROM NORFOLK. WE CARRY A FULL LINE OF ROOT QUALITY GOODS.

—o—

A. I. ROOT CO. of NORFOLK

10 Commerce Street.
NORFOLK, VIRGINIA.

To New York State Beekeepers:

Dear Bosses:

In our daily work for YOU, we often wonder just what you think of us. We don't get many complaints, and all we ever hear from the most of our BOSSES is an order blank filled out, with check or money order to cover. Our old BOSSES have done this year after year, with new ones joining the ranks all the time.

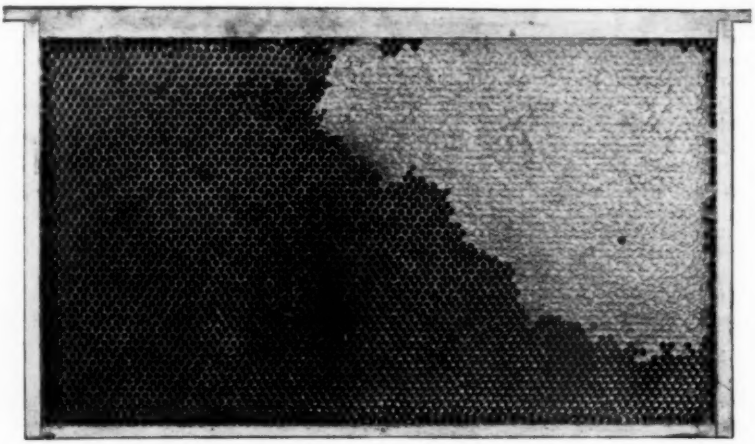
This institution has SERVED the BEEKEEPERS of NEW YORK STATE forty-five years. If you get good crops and are successful, you always pay us good salaries. We like our job and we like our Bosses and we want you to be successful. We know that the most successful beekeepers today use good equipment. That is why we carry for you all the time A GOOD STOCK OF ROOT QUALITY SUPPLIES AND AIRCO FOUNDATION.

HOW CAN WE SERVE YOU BETTER?

Sincerely, your humble servants,

A. I. ROOT CO. OF SYRACUSE,
1631 West Genesee St., Syracuse, N. Y.

SERVES YOU BEST.



A Profit-Making Comb

----*Built in the Brood Nest*

DADANT'S Wired Foundation, fitted solidly in slotted bottom-bar frames in two minutes, ***with no wiring to do,*** produces just such combs, ***right in the brood nest*** ---- a result not easy to get with any other foundation.

NO LOST SPACE ABOVE THE BOTTOM-BAR
NO DRONE COMB
EVERY INCH FOR BROOD AND HONEY

Dadant's Wired Foundation is made of pure sweet beeswax, reinforced with crimped vertical wires. Twenty years from now there will be no shoddy in it.

When you plan your foundation-buying consider what this means to you.

DADANT & SONS, HAMILTON, ILLINOIS
Makers of Dadant's Famous Foundations--Wired, Plain, Surplus

Sold by Lewis Dealers everywhere. Write for address of dealer nearest you.